Vol. 1006 Number 1

OFFICIAL GAZETTE

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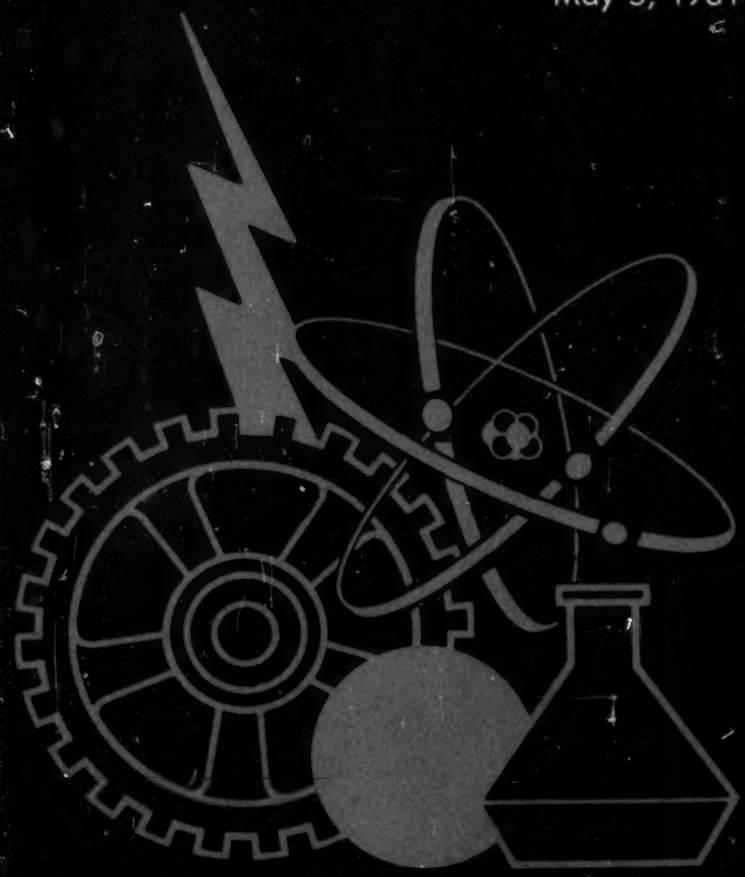
PATENTS

May 5, 1981



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

May 5, 1981 Volume 1006 Number 1

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the list of PCT member countries and the most recent PCT rule changes see the notice appearing at 1001 O.G. 14 in the OFFICIAL GAZETTE of December 9, 1980.

Note that the international fees have been increased as of January 1, 1981. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
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SIDNEY A. DIAMOND,
January 13, 1981. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,544,858, Re. S.N. 191,031, Filed Sept. 25, 1980, Cl. 357/53, INSULATED GATE FIELD-EFFECT TRANSISTOR COMPRISING A MESA CHANNEL AND A THICKER SURROUNDING OXIDE, Else Kooi, Owner of Record: *U.S. Philips Corp., New York, N.Y.,* Attorney or Agent: Thomas A. Briody, Ex. Gp.: 254

3,631,104, Re. S.N. 238,712, Filed Feb. 26, 1981, Cl. 260/561 N, CATALYSTS FOR THE HYDRATION OF NITRILES TO AMIDES, Clarence E. Habermann, et al., Owner of Record: *The Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 117

3,705,100, Re. S.N. 235,093, Filed Feb. 17, 1981, Cl. 210/23, BLOOD FRACTIONATING PROCESS AND APPARATUS FOR CARRYING OUT SAME, William F. Blatt, et al., Owner of Record: *Amicon Corp., Lexington, Mass.,* Attorney or Agent: Edgar H. Kent, Ex. Gp.: 176

3,758,578, Re. S.N. 238,395, Filed Feb. 26, 1981, Cl. 260/561 N, HYDRATION OF NITRILES TO AMIDES USING CUPREOUS CATALYSTS, Clarence E. Habermann, et al., Owner of Record: *The Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 117

3,771,940, Re. S.N. 239,293, Filed Mar. 2, 1981, Cl. 431/4, SMOKELESS GAS FLARE WITH SPECIFIC GRAVITY GAS ANALYZER FOR REDUCING NOISE, John J. Stranahan, et al., Owner of Record: *Texaco, Inc., New York, N.Y.,* Attorney or Agent: Carl G. Ries, et al., Ex. Gp.: 345

3,774,838, Re. S.N. 237,865, Filed Feb. 25, 1981, Cl. 229/62, PLASTIC BAG CONSTRUCTION, Eugene P. Christie, Owner of Record: *Inventor,* Attorney or Agent: John S. Fosse, Ex. Gp.: 241

3,940,606, Re. S.N. 205,641, Filed Nov. 10, 1980, Cl. 362/263, HIGH INTENSITY SPOTLIGHT, Thomas M. Lemons, Owner of Record: *Starlight Associates, Salem, Mass.,* Attorney or Agent: Herbert B. Barlow, et al., Ex. Gp.: 221

3,960,989, Re. S.N. 236,748, Filed Feb. 23, 1981, Cl. 260/45.7 R, COLLOIDAL SOL ANTIMONY PENTAOXIDE FLAMEPROOFING COMPOSITIONS, Henry G. Petrow, et al., Owner of Record: *Inventors,* Attorney or Agent: W. R. Hulbert, Ex. Gp.: 143

4,008,893, Re. S.N. 236,891, Filed Feb. 23, 1981, Cl. 273/85 R, SIMULATED BOWLING GAME, Mark L. Yoseloff, Owner of Record: *Inventor,* Attorney or Agent: Peter L. Costas, Ex. Gp.: 334

4,014,041, Re. S.N. 234,009, Filed Feb. 12, 1981, Cl. 360/96, CASSETTE RECORDING AND HANDLING DEVICE, Rodolfo Cicatelli, Owner of Record: *Autovox, S.p.A., Roma, Italy,* Attorney or Agent: Robert L. Harmon, et al., Ex. Gp.: 235

4,016,261, Re. S.N. 224,438, Filed Jan. 12, 1981, Cl. 424/180, THERAPEUTIC COMPOSITION AND METHOD OF THERAPEUTICALLY TREATING WARM BLOODED ANIMALS THEREWITH, Paul Gordon, Owner of Record: *Strategic Medical Research, Murray, Utah,* Attorney or Agent: Douglas B. Henderson, et al., Ex. Gp.: 125

4,025,128, Re. S.N. 238,949, Filed Feb. 27, 1981, Cl. 308/6 C, ANTIFRICTION BEARINGS, Ted Geffner, Owner of Record: *Inventor,* Attorney or Agent: Jerome Bauer, et al., Ex. Gp.: 243

4,064,207, Re. S.N. 242,096, Filed Mar. 9, 1981, Cl. 264/29.6, FIBRILLAR CARBON FUEL CELL ELECTRODE SUBSTRATES AND METHOD OF MANUFACTURE, Michael A. De Crescente, et al., Owner of Record: *United Technologies Corp., Hartford, Conn.,* Attorney or Agent: Harry J. Gwinnell, Ex. Gp.: 147

4,068,433, Re. S.N. 226,451, Filed Jan. 19, 1981, Cl. 52/207, WOOD-FRAME GLASS DOOR UNIT, J. Raymond Glover, Owner of Record: *Inventor,* Attorney or Agent: D. Carl Richards, et al., Ex. Gp.: 354

4,086,749, Re. S.N. 184,599, Filed Sept. 5, 1980, Cl. 56/98, ADJUSTABLE WIDTH ROW CROP HEADER, Joe E. Shriver, Owner of Record: *Sperry Rand Corp., New Holland, Pa.,* Attorney or Agent: Frank A. Seemar, et al., Ex. Gp.: 333

4,086,749, Re. S.N. 184,500, Filed Sept. 5, 1980, Cl. 56/98, ADJUSTABLE WIDTH ROW CROP HEADER, James G. Greiner, et al., Owner of Record: *Sperry Rand Corp., New Holland, Pa.,* Attorney or Agent: Frank A. Seemar, et al., Ex. Gp.: 333

4,106,972, Re. S.N. 237,432, Filed Feb. 23, 1981, Cl. 156/363, VELOCITY COMPENSATOR AND APPARATUS INCORPORATING THE SAME, Donald L. Caudill, Owner of Record: *Label-Aire Inc., Fullerton, Calif.,* Attorney or Agent: Gordon L. Peterson, Ex. Gp.: 161

4,109,785, Re. S.N. 229,686, Filed Jan. 29, 1981, Cl. 206/0.84, CHILD RESISTANT PACKAGE, Walter G. Berghahn, et al., Owner of Record: *Bristol-Meyers, New York, N.Y.,* Attorney or Agent: John J. Balser, et al., Ex. Gp.: 241

4,112,258, Re. S.N. 234,016, Filed Feb. 12, 1981, Cl. 370/110, COMMUNICATION SYSTEM USING INTELLIGENT NETWORK PROCESSOR, Harold G. Alles, Owner of Record: *Bell Telephone Laboratories,*

Inc., Murray Hill, N.J., Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 236

4,139,742, Re. S.N. 234,109, Filed Feb. 13, 1981, Cl. 179/107 BC, CUTANEOUS COMMUNICATION DEVICE, Jay F. Walker, Owner of Record: *Inventor,* Attorney or Agent: James R. Brueggemann, et al., Ex. Gp.: 235

4,140,046, Re. S.N. 231,504, Filed Feb. 4, 1981, Cl. 493/203, PIERCING BLADE TEMPERATURE CONTROL, Walter V. Marbach, Owner of Record: *Union Carbide Corp., New York, N.Y.,* Attorney or Agent: Maurice W. Ryan, et al., Ex. Gp.: 324

4,140,211, Re. S.N. 235,025, Filed Feb. 17, 1981, Cl. 193/40, WORKPIECE LOADER WITH RESILIENT END OF FEED CHUTE, Joseph Franz Gibbemeyer, Owner of Record: *Cincinnati Milacron Inc., Cincinnati, Ohio,* Attorney or Agent: Daniel P. Worth, et al., Ex. Gp.: 313

4,142,359, Re. S.N. 240,476, Filed Mar. 4, 1981, Cl. 368/155, ELECTRONIC TIMEPIECE, Yasuo Kusumoto, Owner of Record: *Kabushiki Kaisha Daini Seikosha, Tokyo, Japan,* Attorney or Agent: None, Ex. Gp.: 217

4,142,511, Re. S.N. 240,105, Filed Mar. 3, 1981, Cl. 126/271, SOLAR RADIATION COLLECTOR DEVICES AND SYSTEMS, Ralph O. Doughty, et al., Owner of Record: *General Dynamics Corp., Fort Worth, Tex.,* Attorney or Agent: Charles E. Schurman, et al., Ex. Gp.: 345

4,142,929, Re. S.N. 240,364, Filed Mar. 4, 1981, Cl. 156/72, PROCESS FOR MANUFACTURING TRANSFER SHEETS, Kazuo Otomine, et al., Owner of Record: *Inventor,* Attorney or Agent: John E. Lind, et al., Ex. Gp.: 161

4,146,844, Re. S.N. 227,286, Filed Jan. 22, 1981, Cl. 330/149, FEED-FORWARD AMPLIFIER, Patrick Allen Quinn, Owner of Record: *Tektronix Inc., Beaverton, Ore.,* Attorney or Agent: George T. Noe, et al., Ex. Gp.: 252

4,154,705, Re. S.N. 234,315, Filed Feb. 13, 1981, Cl. 252/466 PT, CATALYTIC STRUCTURE, Alfonso L. Baldi, et al., Owner of Record: *Alloy Surfaces Co., Inc., Wilmington, Del.,* Attorney or Agent: Arthur G. Connolly, et al., Ex. Gp.: 116

4,158,239, Re. S.N. 238,382, Filed Feb. 25, 1981, Cl. 365/182, RESISTIVE GATE FET FLIP-FLOP STORAGE CELL, Claude L. Bertin, Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: John E. Hoel, et al., Ex. Gp.: 235

4,163,925, Re. S.N. 239,709, Filed Mar. 2, 1981, Cl. 315/276, TWO-WIRE BALLAST FOR FLUORESCENT TUBE DIMMING, Zoltan L. Gyursanszky, Owner of Record: *Honeywell Ltd., Ontario, Canada,* Attorney or Agent: Laurence J. Marhoefer, et al., Ex. Gp.: 256

4,169,181, Re. S.N. 229,270, Filed Jan. 28, 1981, Cl. 428/217, IMPACT RESISTANT SOFT COATED LAMINATES AND PROCESS FOR MAKING THE SAME, Richard Edgar Molari, Jr., Owner of Record: *General Electric Co., Pittsfield, Mass.,* Attorney or Agent: William F. Mufatti, et al., Ex. Gp.: 164

4,170,474, Re. S.N. 236,481, Filed Feb. 20, 1981, Cl. 75/251, POWDER METAL COMPOSITION, Yew-Tsung Chen, Owner of Record: *Pitney Bowes Inc., Stamford, Conn.,* Attorney or Agent: Melvin J. Scolnick, et al., Ex. Gp.: 111

4,170,657, Re. S.N. 233,239, Filed Feb. 10, 1981, Cl. 424/322, SUBSTITUTED -(((PHENYL)AMINO)-CARBONYL)-BENZAMIDES, Raymond H. Rigterink, Owner of Record: *The Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 125

4,182,537, Re. S.N. 218,599, Filed Dec. 22, 1980, Cl. 308/4 A, ANTI-FRICTION SUCKER ROD GUIDE ASSEMBLY, Clarence Oster, Owner of Record: *Conoco, Inc., Ponca City, Okla.,* Attorney or Agent: Joseph C. Ratarski, et al., Ex. Gp.: 243

4,184,636, Re. S.N. 227,227, Filed Jan. 22, 1981, Cl. 239/11, FLUIDIC OSCILLATOR AND SPRAY-FORMING OUTPUT CHAMBER, Peter Bauer, Owner of Record: *Inventor,* Attorney or Agent: Ira C. Edell, Ex. Gp.: 313

4,193,203, Re. S.N. 242,056, Filed Apr. 3, 1981, Cl. 33/180 AT, METHOD AND APPARATUS FOR REFORMING AND STRAIGHTENING VEHICLES, Pierre N. Le Grand, et al., Owner of Record: *Applied Power Inc., Milwaukee, Wisc.,* Attorney or Agent: Fred Wiviott, et al., Ex. Gp.: 243

4,194,534, Re. S.N. 219,828, Filed Dec. 24, 1980, Cl. 137/625.39, PRESSURE AND TEMPERATURE COMPENSATING HYDRAULIC VALVE, William A. P. Lawrence, et al., Owner of Record: *Elevator Equipment Co., Los Angeles, Calif.,* Attorney or Agent: Vernon D. Beehler, et al., Ex. Gp.: 341

4,195,805, Re. S.N. 240,582, Filed Mar. 4, 1981, Cl. 246/428, RAILROAD SWITCH HEATER, Henry Keep, Jr., Owner of Record: *Inventor,* Attorney or Agent: Albert C. Johnston, et al., Ex. Gp.: 315

4,202,044, Re. S.N. 238,872, Filed Feb. 27, 1981, Cl. 365/182, QUATERNARY FET READ ONLY MEMORY, Kenneth E. Beilstein, Jr., et al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.,* Attorney or Agent: John E. Hoel, et al., Ex. Gp.: 235

4,207,136, Re. S.N. 218,656, Filed Dec. 22, 1980, Cl. 156/515, WELDING MACHINE FOR THERMOPLASTIC WEB, Ehrhart Schulze, Owner of Record: *Karl Heinz Stiegler, Stuttgart, Germany,* Attorney or Agent: Thomas R. Morrison, Ex. Gp.: 161

4,208,147, Re. S.N. 226,696, Filed Jan. 21, 1981, Cl. 29/117, ROLL DEVICE, Sture Giege, et al., Owner of Record: *Sandvik Aktiebolag, Sandviken, Sweden,* Attorney or Agent: Ronald L. Grudziecki, et al., Ex. Gp.: 353

4,218,104, Re. S.N. 229,445, Filed Jan. 29, 1981, Cl. 312/214, REFRIGERATION INSULATION PANEL AND STRUCTURE, Arnold N. Anderson, et al., Owner of Record: *Inventors,* Attorney or Agent: William T. Hough, Ex. Gp.: 355

4,231,513, Re. S.N. 229,627, Filed Jan. 29, 1981, Cl. 236/49, THERMALLY ACTUATED DIFFUSER, Robert L. Vance, et al., Owner of Record: *Acutherm, Inc., Sunnyvale, Calif.,* Attorney or Agent: Karl A. Limbach, et al., Ex. Gp.: 344

4,243,234, Re. S.N. 236,953, Filed Feb. 23, 1981, Cl. 277/084, SEAL AND SEAL ASSEMBLY, James G. Blaha, Owner of Record: *Towmotor Corp., Mentor, Ohio,* Attorney or Agent: Ralph E. Walters, et al., Ex. Gp.: 241

PATENT NOTICES

Certificates of Correction for the Week of May 5, 1981

3,629,106	4,228,961	4,238,690	4,247,954
3,929,861	4,229,106	4,238,922	4,248,096
4,133,241	4,229,430	4,239,056	4,248,638
4,140,516	4,230,475	4,239,674	4,248,758
4,143,279	4,230,542	4,240,751	4,249,014
4,179,306	4,230,629	4,240,831	4,249,365
4,183,646	4,230,890	4,241,063	4,249,603
4,184,602	4,230,894	4,241,102	4,249,638
4,186,028	4,231,251	4,241,105	4,249,813
4,186,176	4,232,015	4,241,133	4,249,948
4,187,662	4,232,053	4,241,373	4,249,970
4,191,860	4,232,881	4,241,411	4,249,979
4,196,329	4,233,013	4,241,708	4,250,237
4,196,859	4,233,052	4,242,012	4,250,240
4,197,916	4,233,085	4,242,386	4,250,486
4,202,513	4,233,297	4,242,411	4,250,879
4,207,242	4,233,305	4,243,792	4,251,129
4,207,406	4,233,665	4,245,306	4,251,349
4,207,924	4,234,538	4,246,064	4,251,492
4,208,724	4,234,849	4,246,906	4,251,660
4,210,825	4,235,249	4,247,320	4,251,698
4,213,517	4,236,390	4,247,384	4,251,753
4,215,565	4,236,397	4,247,389	4,251,824
4,219,764	4,236,897	4,247,434	4,252,144
4,221,658	4,236,944	4,247,515	4,252,179
4,221,660	4,237,283	4,247,540	4,252,574
4,222,306	4,237,306	4,247,614	4,253,127
4,227,774	4,237,468	4,247,809	4,253,809
4,228,036	4,238,542	4,247,947	

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

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Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP
1900 Half St., S.W.
Washington, D.C. 20234

Patent application 6-171,611. Flow-Closing Bleed Valve Assembly. Filed July 23, 1980.

Patent application 6-181,924. Taggants with Explosive Induced Magnetic Susceptibility. Filed Aug. 27, 1980.

Patent application 6-181,940. Multi-Tone Jammer. Filed Aug. 24, 1980.

Patent application 6-185,469. A Netted Search Radar System. Filed Sept. 9, 1980.

Patent application 6-185,472. Automatic Bandwidth Control System. Filed Sept. 9, 1980.

Patent application 6-185,473. Improved Film Cooled Annuler Combustor. Filed Sept. 9, 1980.

Patent 4,226,800. Synthesis of Acetylene-Terminated Compounds. Filed June 14, 1979. Patented Oct. 7, 1980. Not available NTIS.

Patent 4,228,435. Radar Sensitivity Time Control Using Range Gated Feedback. Filed Jan. 23, 1979. Patented Oct. 14, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent application 6-196,707. Method and Apparatus for Reading Map Coordinates. Filed Oct. 14, 1980.

Patent application 6-202,395. Starch Adduct Encasement of Particulate Elastomers. Filed Oct. 30, 1980.

Patent application 6-202,396. Encapsulation by Entrapment Within Starch Adduct Matrix. Filed Oct. 30, 1980.

Patent 4,237,271. Crosslinked Starch Halohydrins and Their Nitrogen-Containing Substitution Products. Filed Apr. 24, 1979. Patented Dec. 2, 1980. Not available NTIS.

Patent 4,237,984. Rotating Field Plot Row Marker. Filed May 30, 1979. Patented Dec. 9, 1980. Not available NTIS.

U.S. DEPARTMENT OF COMMERCE

National Tech. Information Service
Office of Government Inventions and Patents
Springfield, Va. 22161

Patent application 6-156,442. Ultra-Black Coating Due to Surface Morphology. Filed June 4, 1980.

U.S. DEPARTMENT OF ENERGY

Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 6-080,727. Photoresist Laminate. Filed Oct. 1, 1979.

Patent application 6-081,987. High Temperature Lubricating Process. Filed Oct. 4, 1979.

Patent application 6-083,507. Low Temperature Ion Source for Calutrons. Filed Oct. 10, 1979.

Patent application 6-085,653. Improved Method of Preparing Composite Superconducting Wire. Filed Oct. 17, 1979.

Patent application 6-088,301. Sintered Metal Electrodes and Method of Making Same. Filed Oct. 25, 1979.

Patent application 6-089,345. Method of Making a High-Capacity Sintered Iron Electrode and Product. Filed Oct. 30, 1979.

Patent application 6-089,346. Method and Means of Passive Detection of Leaks in Buried Pipes. Filed Oct. 30, 1979.

Patent application 6-090,175. Recovery of Aluminum and Other Metal Values from Fly Ash. Filed Nov. 1, 1979.

Patent application 6–090,846. RF Feedback Free Electron Laser. Filed Nov. 2, 1979.

Patent application 6–092,155. Production of the Ammonium Salt of 3,5-Dinitro-1,2,4-Triazole by Solvent Extraction. Filed Nov. 7, 1979.

Patent application 6–096,859. Method for Etching Thin Films of Niobium and Niobium-Containing Compounds for Preparing Superconductive Circuits. Filed Nov. 23, 1979.

Patent application 6–096,871. Method Utilizing Laser-Processing for the Growth of Epitaxial p-N Junctions. Filed Nov. 23, 1979.

Patent application 6–101,370. Apparatus for Installing Condition-Sensing Means in Subterranean Earth Formations. Filed Dec. 7, 1979.

Patent application 6–102,804. Catalac Free Electron Laser. Filed Dec. 12, 1979.

Patent application 6–106,132. Method of Altering the Effective Bulk Density of Solid Material and the Resulting Product. Filed Dec. 21, 1979.

Patent application 6–118,379. Penetrameter Positioner for Bore-Side Radiography of Tubes. Filed Feb. 5, 1980.

Patent application 6–119,709. Dilatometer. Filed Feb. 8, 1980.

Patent application 6–121,541. Radiant Energy Collector. Filed Feb. 14, 1980.

Patent application 6–121,566. Overvoltage Protector Using Varistor Initiated Arc. Filed Feb. 14, 1980.

Patent application 6–124,871. Sensor for Detecting Changes in Magnetic Fields. Filed Feb. 26, 1980.

Patent application 6–125,406. Preparation of Reactive beta-Dicalcium Silicate. Filed Feb. 28, 1980.

Patent 4,090,012. Electrochemical Heat Engine. Filed May 5, 1977. Patented May 16, 1978. Not available NTIS.

Patent 4,200,846. Efficient Laser Amplifier Using Sequential Pulses of Different Wavelengths. Filed Sept. 29, 1977. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,205,529. LiCl Dehumidifier/LiBr Absorption Chiller Hybrid Air Conditioning System with Energy Recovery. Filed Dec. 4, 1978. Patented June 3, 1980. Not available NTIS.

Patent application 4,208,377. Process for Recovering Actinide Values. Filed July 25, 1978. Patented June 17, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent 4,239,749. 'Neisseria gonorrhoeae' Vaccine. Filed Sept. 27, 1979. Patented Dec. 16, 1980. Not available NTIS.

Patent 4,241,187. Method and Apparatus for Cell and Tissue Culture. Filed Mar. 27, 1979. Patented Dec. 23, 1980. Not available NTIS.

Patent 4,242,502. Enchancement of Cholesterol Combining Properties of Saponins. Filed Apr. 20, 1979. Patented Dec. 30, 1980. Not available NTIS.

Patent 4,244,787. Apparatus and Method for Determining Serum Concentrates of Metabolites by Monitoring Dialysate Fluid. Filed June 11, 1979. Patented Jan. 13, 1981. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent 4,206,466. Non-Fouling Print Stylus. Filed Mar. 12, 1979. Patented June 3, 1980. Not available NTIS.

Patent 4,223,311. Long Range Listening System. Filed Feb. 29, 1956. Patented Sept. 16, 1980. Not available NTIS.

Patent 4,224,520. Room Temperature Two Color Infrared Detector. Filed July 13, 1979. Patented Sept. 23, 1980. Not available NTIS.

Patents Available for Licensing or Sale

3,996,918. SOLAR ENERGY COLLECTOR. *M. R. Quick*, RFD Box 194B, Owancock, Va. 23417 (804) 787-7874.

4,098,018. INSECT TRAP ATTACHABLE TO A TREE. *Jack H. Bartelme*, Rte. 2, Box 1755, Rhinelander, Wis., 54501.

4,142,679. HEAT EXCHANGER CHIMNEY. *Donald McKillop, Sr.*, R.R. 1 Box 124A, Canistota, S. Dak. 57012.

4,146,098. MASONARY CUTTING TOOL. *John S. Cabillo*, 105 East Lola Dr., Austin, Tex. 78753.

4,186,683. BOOK MARK-PAGE LINE-READER. *Edward W. LeRoy*, 45-25 Kennedy Blvd., North Bergen, N.J. 07047.

4,197,667. BATTERY POWERED FISHING ROD HOLDER THAT SNAPS BACK TO HOOK FISH. *Joseph G. McKinsey*, 3524 35th St., Sacramento, Calif. 95817.

4,224,899. PET SHELTER. *Wayne Cruchelow*, 1315 39th St., Des Moines, Iowa 50311.

4,233,872. HUDRAULIC SHOCK ABSORPTION IN PUNCH OR CUTTING PRESSES. Respond to: *E. E. Greigg*, 425-13th St. N.W., Washington, D.C. 20004.

4,236,600. VERTICAL HORIZONTAL RESCUE SYSTEM. *William Wooten*, 238 Moye Ave., Biloxi, Miss. 39532.

4,245,809. FRAME-FORMING METHOD AND APPARATUS. *Andrew G. Jackson*, 975 W. Peachtree, Atlanta, Ga. 30309.

4,250,833. ENTOMOLOGICAL APPARATUS. *Katsuhiko Waldon*, 4000 Shady Oak Dr., Doltewah, Tenn. 37363.

Otis Engineering Corp. is prepared to grant licenses under the following patents upon reasonable terms. Address inquiries to: Patent Attorney, Otis Engineering Corp., P.O. Box 34380, Dallas, Tex. 75234. Telephone (214) 323-3882.

4,095,424. VARIABLE HYDRAULIC PUMP NON-LINEAR CONTROL WITH CAM-ACTUATED, ADJUSTABLY-SEQUENCED SECONDARY CONTROL.

4,142,597. MECHANICAL DETENT JARS.

4,166,475. SAFETY COUPLING.

General Electric Co. is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to: Patent Counsel, General Electric Co., Re-Entry Systems Division, 3198 Chestnut St., Philadelphia, Pa. 19101.

3,868,296. PLASTIC WALL CONSTRUCTION AS A WALL UNIT.

4,201,831. MAGNETIC ADSORBENT COMPOSITE.

4,216,633. PROCESS AND APPARATUS FOR ELEVATING A FOLDING ROOF SYSTEM.

Applications for license under the following patents should be addressed to: Division Patent Counsel, Industrial Electronics Systems Division, General Electric Co., 1501 Roanoke Blvd., Salem, Va. 24153.

3,392,696. SHIP.

3,459,943. SILCON CONTROLLED GATING CIRCUITS WITH A HIGH FREQUENCY TRIGGERING VOLTAGE AND PHOTOCELLS.

3,492,534. FUSE SPARK GAP DEVICE FOR PROTECTION AGAINST LINE TRANSIENT VOLTAGES.

3,527,987. MONITOR CIRCUIT FOR DETECTING THE OCCURRENCE OF ONE OR MORE OF A PLURALITY OF EVENTS IN A SYSTEM.

3,621,352. INVERTER-CONTROL SYSTEM FOR AC MOTOR WITH PULSE-LOCKED CLOSED LOOP FREQUENCY MULTIPLIER.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

4,219,160. FLUID SPRAY NOZZLE HAVING LEAK RESISTANT SEALING MEANS.

Applications for license may be addressed to: Patent Counsel, Gas Turbine Division, General Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

4,249,088. AUTOMATIC DEVICE FOR SYNCHRONIZATION OF PRIME MOVER WITH ELECTRICAL GRID.

4,249,103. BREECH-ASSEMBLED IGNITER DEVICE.

Applications for license may be addressed to: Patent Counsel, General Electric Co., Re-Entry Systems Division, 3198 Chestnut St., Philadelphia, Pa. 19101.

3,597,057. CONTINUOUS MOTION PICTURE PROJECTOR.

3,635,764. COMBINED WASTEWATER TREATMENT AND POWER GENERATION.

3,687,365. THERMOSTATIC FLOW CONTROLLER.

3,710,625. MINIATURIZED AUTOMATIC DECOMPRESSION METERS.

3,724,477. LAMINAR RATE SENSOR.

3,744,297. APPARATUS FOR MONITORING SUSPENDED AEROSOLS AND PARTICULATES IN A GAS.

3,757,586. PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENT.

3,759,101. COMBINED DEPTH GAUGE AND PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENT.

3,759,108. SINGLE GAUGE MULTI-TIME CONSTANT AND MULTI-TISSUE RATIO AUTOMATIC DECOMPRESSION INSTRUMENTS.

3,759,109. MULTI-TIME CONSTANT PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENTS.

3,767,636. SEMISOLID PROPELLANT AND THRUSTOR THEREFOR.

3,788,967. WASTEWATER TREATMENT USING ELECTROLYSIS WITH ACTIVATED CARBON CATHODE.

3,793,173. WASTEWATER TREATMENT USING ELECTROLYSIS WITH ACTIVATED CARBON CATHODE.

3,812,013. SOLUBLE CELLULASE ENZYME PRODUCTION.

3,819,053. WASTE TREATMENT SYSTEM.

3,822,601. PNEUMATIC ANALOGUE DECOMPRESSION INSTRUMENT.

3,838,198. CONDITIONING RAW WASTE INPUT FOR DIGESTION BY THERMOPHILIC AEROBIC MICROORGANISMS.

3,840,417. PROCESS FOR PRODUCING DIMPLED REFLECTORS AND REFRACTORS.

3,855,568. FORCED CONTACT ELECTRICAL CONNECTOR.

3,857,757. MEANS FOR THE OXYGEN/TEMPERATURE CONTROL OF AEROBIC FERMENTATIONS.

3,872,731. MINIATURIZED AUTOMATIC DECOMPRESSION COMPUTER.

3,914,437. OSMOTIC PRESSURE CONTROL TO IMPROVE THERMOPHILIC MICROORGANISM GROWTH.

3,923,597. MERCURY CONCENTRATION BY THE USE OF MICROORGANISMS.

4,058,411. DECRYSTALLIZATION OF CELLULOSE.

4,094,742. PRODUCTION OF ETHANOL FROM CELLULOSE USING A THERMOPHILIC MIXED CULTURE.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602.

D. 210,732. RECHARGEABLE FLASHLIGHT CHARGER AND STORAGE DEVICE OR SIMILAR ARTICLE.

D. 215,258. HAIR CURLER OR SIMILAR ARTICLE.

D. 221,824. HOLDER FOR AN ELECTRIC TOOTHBRUSH OR SIMILAR DEVICE.

D. 228,105. HEATED SHAVE CREAM DISPENSER.

D. 236,167. DESIGN FOR A HAIR DETANGLER.

D. 253,073. DESIGN FOR PISTOL HAIR DRYER OR SIMILAR ARTICLE.

3,183,611. MANUAL SPRAY IRON.

3,251,085. SHOE POLISHER POWER HANDLE.

3,251,086. POWER HANDLE ASSEMBLY FOR SHOE POLISHER.

3,307,211. SHOE POLISHER.

3,443,136. METHOD OF FORMING AND MOTOR STATOR.

3,443,795. BEATER EJECTOR FOR FOOD MIXER.

3,474,552. STEAM IRON VALVE STRUCTURE.

3,476,331. CORD STORAGE MEANS AND ELECTRICAL APPLIANCE.

3,497,650. SWITCH AND SPEED CONTROL MECHANISM.

3,546,428. STEAM GENERATOR.

3,555,699. HAIR DRYER WITH COLLAPSIBLE HOSE STORAGE MEANS.

3,566,059. SWITCH AND SPEED CONTROL MECHANISM.

3,567,341. COFFEEMAKER PUMP.

3,578,884. ORAL HYGIENE APPARATUS.

3,592,126. COFFEEMAKER FILTER.

3,632,083. VALVE FOR PRESSURIZED FLUID SYSTEM.

3,725,848. ATTACHMENT LUG WITH CORD GRIP.

3,728,805. MULTI-FUNCTION STEAM IRON.

3,773,460. APPARATUS FOR HEATING DISPENSED FLOWABLE MATERIAL.

Applications for license may be addressed to: Patent Counsel, General Electric Co., Re-entry Systems Division, 3198 Chestnut St., Philadelphia, Pa. 19101.

3,630,389. MATERIAL-HANDLING APPARATUS.

3,868,296. PLASTIC WALL CONSTRUCTION AS A WALL UNIT.

4,201,831. MAGNETIC ADSORBENT COMPOSITE.

4,216,633. PROCESS AND APPARATUS FOR ELEVATING A FOLDING ROOF SYSTEM.

Application for license may be addressed to the General Electric Co., Division Patent Counsel, Housewares and Audio Business Division, 1285 Boston Ave., Bridgeport, Conn. 06602

4,223,303. ALARM DEVICES FOR INTERCONNECTED MULTI-DEVICE SYSTEMS.

4,242,743. IMPROVED INTRUSION DETECTION METHOD AND APPARATUS.

Applications for license may be addressed to: Patent Counsel, Aircraft Engine Business Group, General Electric Co., 1000 Western Ave., Lynn, Mass. 01910.

3,391,702. LIQUID FLOW SYSTEMS.

3,437,173. GAS TURBINE ENGINE WITH SCREECH ATTENUATING MEANS.

3,673,802. FAN ENGINE WITH COUNTER ROTATING GEARED CORE BOOSTER.

3,715,170. COOLED TURBINE BLADE.

3,719,430. DIFFUSER.

3,739,262. INSPECTION MACHINE USING A MASTER AND FOLLOWER TO GUIDE A PROBE AT A PREDETERMINED ANGLE RELATIVE TO A TEST PIECE.

4,022,018. MOUNTING SYSTEM FOR A THRUST GENERATING ENGINE.

4,027,997. DIFFUSER FOR A CENTRIFUGAL COMPRESSOR.

4,043,509. ACTUATION SYSTEM FOR A GAS TURBINE ENGINE EXHAUST DEVICE.

4,087,996. METHOD AND APPARATUS FOR CORRECTING DISTORTION IN GAS TURBINE ENGINE BLADES.

4,104,002. SPIRAL STRIP ACOUSTIC TREATMENT.

4,129,895. CURRENT WAVE SHAPES FOR JET ENGINE FUEL IGNITERS.

Applications for license may be addressed to: General Electric Co., Component Motor Division, 1635 Broadway, P.O. Box 2204, Fort Wayne, Ind. 46801. Attn: Patent Counsel.

3,278,776. ELECTRIC MOTOR CONSTRUCTION.

3,401,281. ELECTRIC MOTOR WITH PERMANENT MAGNET STATOR POLES AND METHOD OF MAKING.

3,401,282. ELECTRIC MOTOR WITH PERMANENT MAGNET STATOR POLES AND METHOD OF MAKING.

3,719,843. DYNAMOELECTRIC MACHINE COOLING ARRANGEMENT.

4,003,128. METHODS OF MAKING INDUCTIVE DEVICES AND TERMINATION ARRANGEMENTS FOR SAME.

D. 225,335. DYNAMOELECTRIC MACHINE.

Applications for license may be addressed Division Patent Counsel, Switchgear & Distribution Transformer Division, General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa. 19142.

4,071,882. STRUCTURE FOR ELECTRICAL INTERFACE.

4,092,607. MAGNETIC AMPLIFIER HAVING A CO-AXIAL WINDING.

4,238,750. MECHANICAL TRIP DEVICE FOR A CIRCUIT BREAKER.

The RCA Corp. offers to grant nonexclusive licenses on reasonable terms and conditions under the patents listed below. Inquiries respecting licenses under RCA patents should be addressed to RCA Corp., Sr. Vice President, Licensing, 30 Rockefeller Plaza, New York, N.Y. 10020.

4,248,075. METHOD OF FORMING APERTURE WITH ROUNDED EDGES IN SHEET MATERIAL.

4,249,089. SHORT-TERM POWER DROPOUT ARRANGEMENT USEFUL IN A TELEVISION RECEIVER.

4,249,095. COMPARATOR, SENSE AMPLIFIER.

4,249,119. DIGITAL DRIVE CIRCUIT FOR ELECTRIC MOTOR OR THE LIKE.

4,249,132. CONTINUOUS TUNING ARRANGEMENT FOR A MULTIBAND TELEVISION RECEIVER.

4,249,137. AMPLIFIER SYSTEM WITH AGC, AS FOR AN AM RADIO.

4,249,199. PHASE COMPENSATED CONTROLLED OSCILLATOR.

4,249,214. EXCITER HAVING INCIDENTAL PHASE CORRECTION COMPENSATION IN CONSONANCE WITH OUTPUT POWER LEVEL.

4,249,255. CONTINUOUS TUNING ARRANGEMENT FOR A MULTIBAND TELEVISION RECEIVER.

4,249,256. CONTINUOUS TUNING ARRANGEMENT FOR A MULTIBAND TELEVISION RECEIVER.

4,249,959. SOLAR CELL CONSTRUCTION.

4,249,960. LASER ROUNDING A SHARP SEMICONDUCTOR PROJECTION.

4,250,461. CURRENT MIRROR AMPLIFIER.

4,250,464. MULTI-MODE RELAXATION OSCILLATOR.

4,250,475. ADJUSTABLE PASSBAND FILTER.

4,250,500. SMOKE DETECTOR.

4,250,520. FLIP CHIP MOUNTED DIODE.

4,250,521. VIDEO SIGNAL DROPOUT COMPENSATOR.

4,250,525. TELEVISION HORIZONTAL AFPC WITH PHASE DETECTOR DRIVEN AT TWICE THE HORIZONTAL FREQUENCY.

4,250,541. PUSH-PUSH RESONANT POWER INVERTER.

4,251,137. TUNABLE DIFFRACTIVE SUBTRACTIVE FILTER.

4,251,206. APPARATUS FOR AND METHOD OF SUPPORTING A CRUCIBLE FOR EFG GROWTH OF SAPPHIRE.

4,251,742. CURRENT SOURCE, AS FOR SWITCHING PIN DIODES.

4,251,756. REGULATED DEFLECTION CIRCUIT.
4,251,778. CIRCUIT WITH ELECTRICALLY CONTROLLED GAIN.
4,251,811. BATTERY TEST SYSTEM, AS FOR SMOKE DETECTOR ALARM.
4,251,833. TELEVISION HORIZONTAL AFPC WITH PHASE DETECTOR DRIVEN AT TWICE THE HORIZONTAL FREQUENCY.
4,252,574. LOW LEAKAGE N-CHANNEL SOS TRANSISTORS AND METHOD OF MAKING THEM.
4,252,848. PERFLUORINATED POLYMER THIN FILMS.
4,252,886. NOVEL RESISTS AND RECORDING MEDIA.
4,253,077. YOKE TABBING DEVICE.
4,253,105. SEMICONDUCTOR POWER DEVICE INCORPORATING A SCHOTTKY BARRIER DIODE BETWEEN BASE AND EMITTER OF A PNP DEVICE.
4,253,106. GATE INJECTED FLOATING GATE MEMORY DEVICE.
4,253,110. AUTOMATIC KINESCOPE BEAM CURRENT LIMITER WITH SEQUENTIAL CONTROL MODES.
4,253,116. TELEVISION SYNCHRONIZING SYSTEM OPERABLE FROM NONSTANDARD SIGNALS.
4,253,120. DEFECT DETECTION MEANS FOR CHARGE TRANSFER IMAGERS.
4,253,121. PLURAL SEQUENTIAL OPERATING MODE AUTOMATIC KINESCOPE BEAM CURRENT LIMITER.
4,253,162. BLOCKED SOURCE NODE FIELD-EFFECT CIRCUITRY.
4,253,196. FREQUENCY CONVERTER, AS FOR FIRST DETECTOR OF HETERODYNE RADIO RECEIVER.
4,242,913. ACOUSTIC VARIABLE FOCAL LENGTH LENS ASSEMBLY.
4,243,283. CIRCUIT BOARD GUIDE AND GROUND CONNECTOR.
4,243,395. METHOD FOR PRECISION GRINDING OF HARD, POINTED MATERIALS.
4,243,911. RESISTIVE LENS ELECTRON GUN WITH COMPOUND LINEAR VOLTAGE PROFILE.
4,243,912. SIMPLIFIED RESISTIVE LENS ELECTRON GUN WITH COMPOUND LINEAR VOLTAGE PROFILE.
4,243,913. COLOR PICTURE TUBE MAGNETIC SHIELDING AND DEGAUSSING STRUCTURE.
4,243,917. FLASH LAMP DRIVE CIRCUIT.
4,243,918. SIGNAL INTEGRATOR WITH TIME CONSTANT CONTROLLED BY DIFFERENTIATING FEEDBACK.
4,243,948. SUBSTANTIALLY TEMPERATURE-INDEPENDENT TRIMMING OF CURRENT FLOWS.
4,243,951. HIGH REPETITION RATE DRIVER CIRCUIT FOR MODULATION OF INJECTION LASERS.
4,243,952. TEMPERATURE COMPENSATED BIAS CIRCUIT FOR SEMICONDUCTOR LASERS.
4,243,953. VOLTAGE CONTROLLED OSCILLATOR PRESENTING HIGH IMPEDANCE TO PARALLEL RESONANT TANK CIRCUIT.
4,244,001. FABRICATION OF AN INTEGRATED INJECTION LOGIC DEVICE WITH NARROW BASE WIDTH.
4,244,027. DIGITAL OPEN LOOP PROGRAMMABLE FREQUENCY MULTIPLIER.
4,245,205. CONVERGENCE ADJUSTMENT ARRANGEMENT USING MAGNETIC TABS WITH DIFFERENTIAL MOTION AND ROTARY DRIVE.
4,245,210. THICK FILM RESISTOR ELEMENT AND METHOD OF FABRICATING.
4,245,221. FM-CW RADAR RANGING SYSTEM WITH AUTOMATIC CALIBRATION.
4,245,237. CONTROLLABLE NON-LINEAR PROCESSING OF VIDEO SIGNALS.
4,245,238. NON-LINEAR PROCESSING OF VIDEO IMAGE VERTICAL DETAIL INFORMATION.
4,245,251. AFPC PHASE DETECTOR WITH NO OUTPUT FROM ALTERNATE SYNC PULSES.
4,245,336. ELECTRONIC TONE GENERATOR.
4,245,351. AFT ARRANGEMENT FOR A PHASE LOCKED LOOP TUNING SYSTEM.
4,246,535. DESIGN METHOD FOR LINEAR AMPLIFIER.
4,246,551. MULTIVIBRATOR CIRCUIT.
4,246,583. MULTIMODE FEED FOR A MONOPULSE RADAR.
4,246,591. CCD IMAGERS.
4,247,031. METHOD FOR CRACKING AND SEPARATING PELLETS FORMED ON A WAFER.
4,247,119. RECORD IDENTIFICATION APPARATUS FOR VIDEO DISC PLAYER.
4,247,822. FREQUENCY TRANSLATION MEANS.
4,247,861. HIGH PERFORMANCE ELECTRICALLY ALTERABLE READ-ONLY MEMORY (EAROM).
4,247,866. NESTED LOOP VIDEO DISC SERVO SYSTEM.
4,247,898. APPARATUS FOR COMPUTING THE CHANGE IN BEARING OF AN OBJECT.
4,247,946. SMART NOISE GENERATOR.
4,240,093. INTEGRATED CIRCUIT DEVICE INCLUDING BOTH N-CHANNEL AND P-CHANNEL INSULATED GATE FIELD EFFECT TRANSISTORS.
4,240,102. IDENTIFICATION SYSTEM FOR SECAM OR SECAM/PAL COLOR TELEVISION RECEIVERS.
4,240,111. VERTICAL SYNC SEPARATOR.
4,240,594. CREEL.
4,241,108. SPRAYABLE TITANIUM COMPOSITION.
4,241,120. VIDEO DISCS AND MOLDING COMPOSITIONS THEREFOR.
4,241,265. TELEVISION VERTICAL RAMP GENERATOR.
4,241,345. PULSE RADAR TRANSMITTING OSCILLATOR.
4,241,355. ABLATIVE OPTICAL RECORDING MEDIUM.
4,241,423. OPTICAL MEMORY WITH INJECTION LASER AS LIGHT SOURCE AND DETECTOR.
4,241,450. AUTOMATIC TURN-OFF APPARATUS FOR A RADIO OR TELEVISION RECEIVER.
4,242,112. SOLAR POWERED DEHUMIDIFIER APPARATUS.

4,242,643. VARIABLE GAIN CURRENT AMPLIFIER.

4,242,644. PULSE MODULATOR FOR OPERATING A DEVICE IN THE AVALANCHE MODE.

4,242,655. RF CONNECTOR ASSEMBLY WITH LOW FREQUENCY ISOLATION.

4,242,689. ABLATIVE OPTICAL RECORDING MEDIUM.

4,242,700. LINE-TRANSFER CCD IMAGERS.

4,242,738. LOOK AHEAD HIGH SPEED CIRCUITRY.

4,236,823. DIFFRACTOMETER FOR MEASURING SIGNAL DEPTH AND WIDTH.

4,237,208. SILANE ELECTRON BEAM RESISTS.

4,237,210. AQUEOUS PHOTORESIST METHOD.

4,237,379. METHOD FOR INSPECTING ELECTRICAL DEVICES.

4,237,383. HIGH SPEED LOADING OF OUTPUT REGISTER OF CCD ARRAY SYSTEM.

4,237,423. DIGITAL PHASE DETECTOR.

4,237,438. HIGH RESISTANCE CONTINUOUS SHIELD FOR REDUCED CAPACITIVE COUPLING IN A DEFLECTION YOKE.

4,237,472. HIGH PERFORMANCE ELECTRICALLY ALTERABLE READ ONLY MEMORY (EAROM).

4,237,474. ELECTROLUMINESCENT DIODE AND OPTICAL FIBER ASSEMBLY.

4,237,477. CHARGE TRANSFER IMAGER.

4,237,490. SIGNAL OVERLOAD PREVENTION CIRCUIT.

4,237,491. TELEVISION CAMERA HIGHLIGHT DISCHARGE APPARATUS.

4,237,600. METHOD FOR FABRICATING STACKED SEMICONDUCTOR DIODES FOR HIGH POWER/LOW LOSS APPLICATIONS.

4,238,712. SWITCHED VERTICAL DEFLECTION WITH TRIAC.

4,238,713. VERTICAL DEFLECTION CIRCUIT.

4,238,745. PHASE SHIFTER.

4,238,796. RADIO FREQUENCY PULSE GENERATOR.

4,238,855. PARALLEL OPERATION OF MULTIPLE TV TRANSMITTERS.

4,239,108. VIDEO DISC CADDY.

4,239,237. TURNTABLE DRIVE SYSTEM FOR VIDEO DISC PLAYER.

4,239,238. RECORD EXTRACTING MECHANISM FOR CADDY TYPE VIDEO DISC PLAYER.

4,239,790. METHOD OF DEFINING A PHOTORESIST LAYER.

4,239,939. STEREOPHONIC SOUND SYNTHESIZER.

4,239,994. ASYMMETRICALLY PRECHARGED SENSE AMPLIFIER.

4,240,012. REGULATED DEFLECTION CIRCUIT.

4,240,013. HORIZONTAL DEFLECTION AND POWER SUPPLY CIRCUIT WITH A START-UP ARRANGEMENT.

4,240,042. BANDWIDTH LIMITED LARGE SIGNAL IC AMPLIFIER STAGE.

4,240,090. ELECTROLUMINESCENT SEMICONDUCTOR DEVICE WITH FIBER-OPTIC FACE PLATE.

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	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
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	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
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PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF Mar. 21, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action

CHEMICAL EXAMINING GROUPS

GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director 2-07-80
Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.

GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director 10-11-79
Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.

HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director 10-22-79
Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.

COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director 2-01-80
Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.

SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—
R. F. WHITE, Director 1-01-80
Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.

ELECTRICAL EXAMINING GROUPS

INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT 7-10-79
Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.

SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT 9-05-79
Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.

INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT 11-14-79
Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.

RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—
A. L. SMITH, Director 7-09-79
Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.

ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director 12-21-78
Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.

DESIGN, GROUP 290—C. D. QUARFORTH, Director 2-12-79
Industrial Arts; Household, Personal and Fine Arts.

MECHANICAL EXAMINING GROUPS

HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director 10-29-79
Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.

MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... 11-01-79
Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.

AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—
R. E. AEGERTER, Director 9-18-77
Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.

HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director 7-27-79
Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.

GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—
G. M. FORLENZA, Director 3-19-79
Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.

Expiration of patents: The patents within the range of numbers indicated below expire during Feb. 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,122,749 to 3,127,613, inclusive
Plant Patents ..... Numbers 2,368 to 2,388, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED MAY 5, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T100,601
COMPOSITIONS AND PROCESSES FOR PRODUCING FLAME RETARDANT TEXTILE MATERIALS BASED ON METHYLOLAMINOTRIHALOPROPYL TRIAZINES AND ANTIMONY OXIDES

Leon H. Chance, 715 Ursulines St., New Orleans, La. 70116; Judy D. Timpa, 2320 Metairie Ct., Metairie, La. 70001, and George L. Drake, Jr., 2009 Elizabeth Ave., Metairie, La. 70003

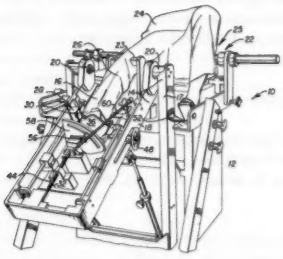
Filed Mar. 26, 1980, Ser. No. 134,014
Int. Cl.[3] D06M *13/44, 13/34, 9/00*
U.S. Cl. 8—115.7
No Drawing. 27 Pages Specification

The tetramethylol derivatives of 2,4-diamino-6(3,3,3-tribromo-1-propyl)-1,3,5-triazine and 2,4-diamino-6(3,3,3-trichloro-1-propyl)-1,3,5-triazine, namely: 2,4-bis[di(hydroxymethyl-)amino]-6-(3,3,3-tribromo-1-propyl)-1,3,5-triazine and 2,4-bis[-di(hydroxymethyl)amino]-6-(3,3,3-trichloro-1-propyl)-1,3,5-triazine, respectively, were used in combination with colloidal antimony oxides and or water emulsifying agents and suitable solvent to impart durable flame-retardancy to cellulosic materials, protein fibers such as wool, and to blends of cellulosic materials and synthetic fibers, particularly to cotton textiles or textiles composed of blends of cotton and polyester. Afterglow was eliminated by the use of small amounts of reactive phosphorus compounds.

T100,602
APPARATUS FOR MEASURING ANGLES

Daniel G. Roley, R.R. #3, Box V-78, Chillicothe, Ill. 61523, and Paul L. Wright, 4321 Nelson Dr., Peoria, Ill. 61614

Filed Oct. 22, 1979, Ser. No. 86,985
Int. Cl.[3] A61B *5/10*
U.S. Cl. 128—782
4 Sheets Drawing. 9 Pages Specification



An apparatus for measuring angles of displacement between human femur and tibia leg bones to determine the stability (stiffness and laxity) of a knee joint has structure and instruments for checking upper and lower leg bone alignment, angulation and degree of relative lateral displacement. A platform is provided to support and secure a human torso about its hips while auxiliary inner and outer coacting frame support structure adjustably secures the leg bones. Sensing and indicating instruments associated with the coacting frame structure and an auxiliary detachable support frame contact the leg and foot to give a reading on leg and knee stability as the lower leg bone (tibia) and the foot are selectively placed at various angles while predetermined side loads on the tibia are simultaneously applied.

T100,603
BENEFICIATION OF HIGH CARBONATE PHOSPHATE ORES

James R. Lehr, 124 Riverview Dr., and Shuang-Shii Hsieh, 1622 Bridlewood Dr., both of Florence, Ala. 35630

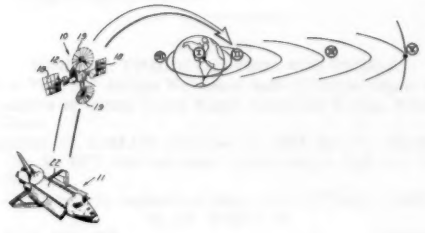
Filed May 5, 1980, Ser. No. 146,579
Int. Cl.[3] B03D *1/06*
U.S. Cl. 209—167
No Drawing. 10 Pages Specification

A phosphate ore beneficiation process to remove undesirable carbonate mineral components by flotation by subjecting a deslimed phosphate ore flotation feed containing the carbonate mineral impurities to a froth flotation treatment in the presence of a phosphate depressant, said depressant being alkyl phosphonic acids including alkyl diphosphonic acids such as hydroxyethylidene diphosphonic acid, and a carbonate mineral collector reagent, said collector being a fatty acid or mixtures thereof; removing the carbonate mineral overflow so obtained by froth flotation; and recovering the phosphate value in the underflow product of said flotation process. The process can be performed either prior to or after the conventional flotation separation treatment for removing siliceous mineral contaminants from the phosphate mineral by methods known to the art.

T100,604
METHOD OF PLACING A SPACECRAFT INTO FINAL EARTH ORBIT OR EARTH ESCAPE TRAJECTORY

Philip D. Crill, 744 La Prenda Rd., Los Altos, Calif. 94022, and Shel Kulick, 22364 Ramona Ct., Cupertino, Calif. 95014

Continuation of Ser. No. 854,553, Nov. 25, 1977. This application Jan. 29, 1979, Ser. No. 7,532
Int. Cl.[2] B64G *1/10*
U.S. Cl. 244—158 R
3 Sheets Drawing. 29 Pages Specification



The method of placing a spacecraft having on-board propulsion devices with self-start capabilities into a series of successively higher transfer orbits to attain from a low earth orbit a final earth orbit or earth escape trajectory. Incremental thrusting impulses limited to a thrusting level at which the acceleration of the spacecraft is more than 0.01 g at beginning of thrusting, but is no more than 0.3 g at termination of thrusting are applied to the spacecraft. The propulsion propellant is ignited upon the near completion of each orbit at the perigee altitude, the latter being substantially common to all of the transfer

orbits. The duration of each propellant burn is selectively varied during the transit from one transfer orbit to the next higher orbit and results in the spacecraft being propelled into successively higher energy orbits or trajectories until the desired orbit or escape trajectory is attained. The self-start capability of the spacecraft permits it to be parked in any transfer orbit to permit checkout of its equipment and recapture if a malfunction is detected.

T100,605

CABLE CLAMP WITH COMPRESSION LIMIT STOP

Robert L. Christian, 3855 Graces La., Decatur, Ill. 62521

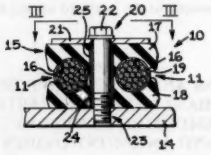
Continuation of Ser. No. 12,161, Jan. 10, 1979, abandoned. This application Dec. 20, 1979, Ser. No. 105,805

Int. Cl.[3] **F16L** *3/22;* **H01R** *7/24*

U.S. Cl. 248—68 R

1 Sheets Drawing. 10 Pages Specification

A clamp **(10)** is particularly adapted for use on a construction vehicle for clamping one or more battery cables **(11)** thereon. The clamp **(10)** permits longitudinal adjustment of the cables **(11)** while yet limiting the degree of compression imparted thereto to prevent shredding of the electrical insulation **(13)** thereof. The clamp **(10)** comprises a support **(14)** and a clamping member **(21)** having an elastomeric pad **(15)** compressed therebetween and a stop **(25)** for limiting the degree of compression imparted to the pad **(15)**.



REISSUES

MAY 5, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,597

TWO WIRE CURRENT TRANSMITTER RESPONSIVE TO A RESISTIVE TEMPERATURE SENSOR INPUT SIGNAL

Earl A. Grindheim, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

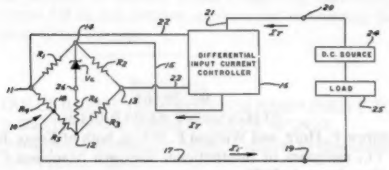
Original No. 4,016,763, dated Apr. 12, 1977, Ser. No. 510,026, Sep. 27, 1974. Division of Ser. No. 14,748, Feb. 24, 1970, Pat. No. 3,859,594, which is a continuation of Ser. No. 661,988, Aug. 21, 1967, abandoned. Application for reissue Aug. 17, 1978, Ser. No. 934,450

The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.

Disclosure was also published under second Trial Voluntary Protest Program on Apr. 13, 1976

Int. Cl.[3] **G01K** *7/24*

U.S. Cl. 73—362 AR **12 Claims**



1. A resistance-to-current converter system comprising:

a. a sensing resistor responsive to a variable physical condition to be indicated,

b. a bridge including said resistor, said bridge having input and output junctions and being balanced only when said resistor has a predetermined value, whereby the bridge voltage developed at said output junctions is a function of the deviation of the resistor from said predetermined value as a result of a change in said physical condition, *said bridge further comprising voltage reference means connected across said input junctions to stabilize the voltage thereacross,*

c. a D-C amplifier whose input circuit is connected to the output junctions of said bridge whereby the impedance in the output circuit of the amplifier varies as a function of said bridge voltage,

d. a direct-voltage source providing an operating voltage both for said bridge and said amplifier,

e. a load connected in series with said source and having an output current flow therethrough resulting from variations in said resistor and hence indicative of said condition,

f. a voltage regulator,

g. a pair of wires connecting said series-connected source and load through said regulator across both the output circuit of said amplifier and the input junctions of said bridge, whereby the operating voltage of said amplifier is stabilized despite variations in said output current flow through said load resulting from variations in the value of said resistor,

h. a feedback resistor connected in series with said load to produce a feedback voltage, and

i. means to feed said feedback voltage into the arm of said bridge containing said sensing resistor in series opposition to the voltage produced by the sensing resistor to rebalance the bridge, whereby the output current is accurately proportional to changes in said resistor.

Re. 30,598

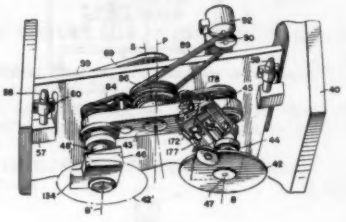
METHOD FOR TRANSVERSE CUTTING

Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Original No. 4,041,813, dated Aug. 16, 1977, Ser. No. 658,181, Feb. 17, 1976. Application for reissue Feb. 14, 1979, Ser. No. 12,034

Int. Cl.[3] **B26D** *1/58;* **B23D** *25/02*

U.S. Cl. 83—14 **5 Claims**



1. A method of cutting logs of convolutely wound web material *such as toilet paper and toweling,* comprising:

uniformly advancing a log along a path into a cutting station having an arm above said path,

rotating said arm about an axis skewed with respect to said path, said arm having a disc blade *support* mounted thereon *and rotatably carrying a disc blade* with the blade axis spaced from the arm axis to cause said blade to intersect said path and cut a log *adjacent the bottom of the blade orbit,* maintaining said blade axis at an angle skewed relative to said arm axis to position said disc blade continually perpendicular to said path whereby said disc blade makes a square cut through a log, [and] *said support carrying sharpening stones,*

continuously planetarily rotating said disc blade *support* about the blade axis from said arm axis *to maintain said sharpening stones above the axis of said disc blade and in a fixed relation to said blade axis whereby said stones are adapted to sharpen said blade at any point during the orbit thereof, and*

continuously rotating said disc blade about said blade axis independently of said arm.

Re. 30,599

IGNITION TIMING CONTROL FOR ENGINE

Toru Yagi, and Akihisa Nakamura, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Original No. 4,133,324, dated Jan. 9, 1979, Ser. No. 811,244, Jun. 29, 1977. Application for reissue May 1, 1980, Ser. No. 145,666

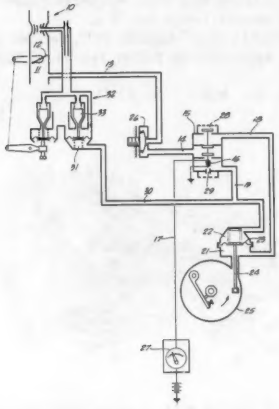
Claims priority, application Japan, Jul. 7, 1976, 51-89348[U]

Int. Cl.[3] **F02P** *5/04*

U.S. Cl. 123—408 **3 Claims**

1. For use with an internal combustion engine connected to drive a vehicle, the engine having an intake passage for an air-fuel mixture and provided with a throttle valve, the improvement comprising, in combination: a vacuum line communicating with the intake passage downstream from the throttle valve, a three-way valve connected to said vacuum line, means including a movable member for controlling the ignition timing of said engine, a vacuum responsive device including a flexible diaphragm connected to said member, walls forming a spark advance chamber on one side of said diaphragm and

forming a spark retard chamber on the other side of said diaphragm, a first conduit connecting said three-way valve to said spark advance chamber, a second conduit connecting said three-way valve to said spark retard chamber, electromagnetic means for moving said three-way valve to connect said vacuum line to either said first first conduit or to said second conduit, a valve responsive to engine temperature acting to close said vacuum line when the engine temperature falls



below a predetermined value, an electric circuit for operation of said electromagnetic means, said circuit including a switch sensitive to vehicle velocity and acting to [de-energize] *energize* said electromagnetic means when the vehicle velocity exceeds a predetermined value, an additional fuel supply system connected to said intake passage and having a valve operated by vacuum pressure, and a third conduit connected to said second conduit to close the latter said valve to cut off the additional fuel supply when the spark is retarded.

Re. 30,600

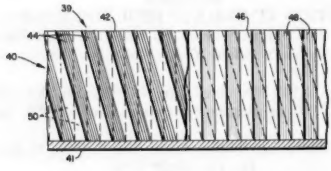
COMPLIANT STRUCTURAL MEMBERS

John V. Long, El Cajon, and George D. Cremer, Lemon Grove, both of Calif., assignors to International Harvester Company, Chicago, Ill.

Original No. 4,022,481, dated May 10, 1977, Ser. No. 560,607, Mar. 21, 1975. Division of Ser. No. 335,320, Feb. 23, 1973, Pat. No. 3,916,054. Application for reissue May 22, 1978, Ser. No. 907,962

Int. Cl.[3] **B32B** *3/12, 3/28;* **F16J** *15/34*

U.S. Cl. 277—96.1 **17 Claims**



1. In a machine having two, juxtaposed, relatively movable components, means providing a seal between said components comprising an assemblage of deformable metallic strips disposed in side-by-side relationship with the opposite edges of the strips respectively facing one and the other of said components; means spacing said strips apart to provide interstices therebetween; and a backing member disposed between said assemblage of metallic strips and one of said components for maintaining said strips of the assemblage in the aforesaid relationship; the edges of the strips facing said one of said components being fixed to the backing member and the edges of the strips facing the other of said components being free of attachment to each other, whereby the portions of the strips nearer to said other component can move relative to each other and to said other component to provide a compliant seal between said assemblage of metallic strips and said other component; the means spacing said strips apart comprising corrugations formed in at least part of said strips; and said strips being oriented to extend in the direction of relative movement between said components with the corrugations at the edges of the strips which are free of attachment to each other being at an angle of less than 90° to said direction of movement to thereby minimize the resistance to deformation offered by said strips.

Re. 30,601

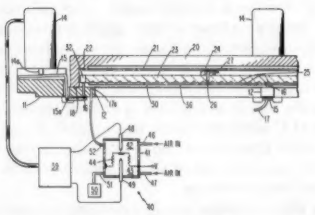
ALIGNMENT APPARATUS

Andrew F. Horr, and William F. White, both of Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Original No. 4,093,378, dated Jun. 6, 1978, Ser. No. 737,819, Nov. 1, 1976. Application for reissue Dec. 11, 1978, Ser. No. 968,053

Int. Cl.[3] **G03B** *27/62, 27/64*

U.S. Cl. 355—76 **9 Claims**



1. A mechanism for positioning the surface of an object in a selected position with respect to a reference plane comprising:

means for holding said object,

means for defining said reference plane, *an adapter ring for mating with said holding means,*

driver means *mounted on said adapter ring and* aligned with said holding means, and

sensor means coupled to said driver means and spaced from said object for sensing the surface of said object with respect to said reference plane and controlling respective ones of said driver means to engage and move the holding means to position the sensed surface of said object in said selected position with respect to said reference plane[.] *said holding means comprising a chuck enclosing a spring loaded mounting means provided with means for holding an object having a flat surface thereon, and*

said driver means being aligned with said mounting means to position the sensed surface of the object by moving said mounting means against said spring.

Re. 30,602

ALKALINE PROTEASE PRODUCED BY A BACILLUS

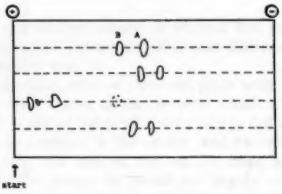
Bauke TeNijenhuis, Rijswijk, Netherlands, assignor to Gist-Brocades N.V., Delft, Netherlands

Original No. 4,002,572, dated Jan. 11, 1977, Ser. No. 633,026, Nov. 18, 1975. Application for reissue Dec. 30, 1977, Ser. No. 866,179

Claims priority, application United Kingdom, Nov. 19, 1974, 50044/74

Int. Cl.[3] **C11D** *7/42;* **C12N** *9/54*

U.S. Cl. 252—99 **8 Claims**



1. A process for the preparation of an enzyme having high proteolytic activity in alkaline media comprising cultivating Bacillus strain PB 92 in a nutrient medium and recovering the formed proteolytic enzyme.

Re. 30,603

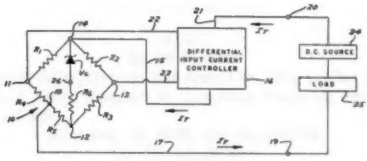
TWO WIRE CURRENT TRANSMITTER RESPONSIVE TO A RESISTANCE SENSOR INPUT SIGNAL

Earl A. Grindheim, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Original No. 3,859,594, dated Jan. 7, 1975, Ser. No. 14,748, Feb. 24, 1970. Continuation of Ser. No. 661,988, Aug. 21, 1967, abandoned. Application for reissue Aug. 17, 1978, Ser. No. 934,451

Int. Cl.[3] **G01R** *27/00*

U.S. Cl. 324—57 R **28 Claims**



1. A measuring system comprising a pair of *current* terminals, a source of direct current and a load, means to connect the source and load in series between said current terminals, means to provide a variable voltage signal which varies in magnitude as a function of a variable condition to be measured *said variable voltage means including voltage reference source means for generating a reference voltage,* a current adjusting controller means having a voltage responsive input coupled to said variable voltage means for receiving said variable voltage signal and adjusting the current through said terminals as a function of the magnitude of the variable voltage signal at said input, said controller means being connected across said terminals and energized solely from current supplied through said terminals, resistance means connected to said current terminals *and said voltage reference source means* to provide a voltage feedback which is a function of *said reference voltage and* total current flowing through said terminals, and means connecting said resistance means to said input of said controller means to provide the feedback voltage as determined by the current through said resistance means to tend to balance a change in the variable voltage signal at said input occurring due to a change in magnitude of said variable condition and to stabilize the adjusted current through said terminals at a new magnitude which is representative of a change in magnitude of said variable condition.

Re. 30,604

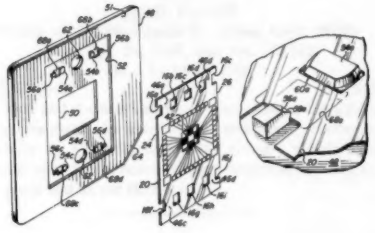
REUSABLE FIXTURE FOR AN INTEGRATED CIRCUIT CHIP

John L. Kowalski, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Original No. 4,069,496, dated Jan. 17, 1978, Ser. No. 755,758, Dec. 30, 1976. Application for reissue Mar. 5, 1979, Ser. No. 17,759

Int. Cl.[3] **H01L** *23/48, 23/02;* **H02G** *13/08;* **H01R** *13/50*

U.S. Cl. 357—70 **16 Claims**



14. A fixture for a substantially rectangular segment of film having substantially planar surfaces and four edges; said segment having a plurality of sprocket holes arranged in two parallel rows which rows are substantially parallel to opposite edges of the segment, at least a pair of sprocket holes of each row being attachment sprocket holes; each segment having at least four attachment webs, each web forming an edge of an attachment sprocket hole and having a centroid; said fixture comprising:

a laminar layer;

means forming an aperture in said laminar layer,

recess means surrounding said aperture, the dimensions of the recess being such as to receive and position a segment relative to said aperture so that said aperture provides access to the segment positioned in said recess means;

means located in said recess means for partially overlying the attachment webs of a segment positioned in said recess means for retaining a segment in the recess means; and

means forming detachment openings through said fixture for providing access to the centroids of the attachment webs of a segment positioned in said fixture.

PLANT PATENTS

GRANTED MAY 5, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,705

ROSE PLANT-MEIBIRANDA VARIETY

Marie L. Meilland, Antibes, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Sep. 17, 1979, Ser. No. 76,311

Claims priority, application Morocco, Oct. 24, 1978, PV18433

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of Hybrid Tea rose plant of vegetative reproduction, as described and illustrated, characterized by the fact that:

from the physical point of view the plant with green adult wood is erect, forms double flowers which are bicolored with the inside of the petals being poppy red on the edge and mimosa yellow in the center, and the outside of the petals being red currant red on the edge and mimosa yellow in the center, the petals are largely rounded with their lateral edges reflexed, and frequently exhibit a pronounced median groove; and

from the biological point of view the rose plant is of very vigorous vegetation, exhibits nearly continuous flowering under glass, and forms flowers of long duration both on and off the plant.

4,706

ROSE PLANT

O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710

Filed Apr. 21, 1980, Ser. No. 142,179

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by its unusual yellow ochre-orange buff flower coloring, blooms borne on a robust, vigorous plant and attractive green foliage.

4,707

ROSE PLANT

Herbert C. Swim, Ontario, and Arnold W. Ellis, Garden Grove, both of Calif., assignors to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Dec. 26, 1979, Ser. No. 106,545

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—18 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, being particularly characterized in its tendency to carry its blooms singly on normal to strong medium-length to long stems, the blooms being generally from 3½ to 4½ inches across, and having a relatively uniform pink coloration throughout, with from about 35 to 45 petals.

4,708

ROSE PLANT

O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710

Filed Apr. 21, 1980, Ser. No. 142,361

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by brick red flowers which darken upon aging, borne primarily singly to a stem and are long lasting on the plant and as cut flowers and a vigorous, upright plant.

4,709

ROSE PLANT

O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710

Filed Apr. 21, 1980, Ser. No. 142,362

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as shown and described, characterized particularly by brilliant currant red flowers which maintain color well upon aging, borne on long stems and are long lasting on the plant and as cut flowers.

4,710

ROSE PLANT

O. L. Weeks, 4759 Philadelphia St., Chino, Calif. 91710

Filed Apr. 14, 1980, Ser. No. 140,118

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—28 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as shown and described, characterized particularly by vibrant red colored substantially non-fading flowers borne in medium sized clusters and showing yellow coloring on reverse of petals.

PATENTS

GRANTED MAY 5, 1981

ERRATA

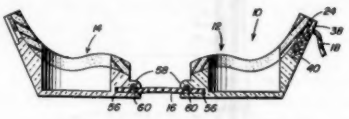
For CLASS	See PATENT NO.
474–231	4,265,134
411–442	4,265,160
493–435	4,265,437
493–428	4,265,438
493–451	4,265,439
280–803	4,265,480
564–096	4,265,831
564–163	4,265,832
564–435	4,265,833
564–421	4,265,834
564–204	4,265,835
570–230	4,265,836
570–243	4,265,837
427–393.5	4,265,946

PATENTS

GRANTED MAY 5, 1981

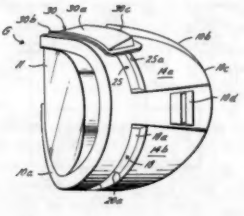
GENERAL AND MECHANICAL

4,264,987
GOGGLES
John L. Runckel, P.O. Box 87, Portland, Oreg. 97201
Continuation-in-part of Ser. No. 957,009, Nov. 2, 1978, abandoned. This application Aug. 1, 1979, Ser. No. 62,818
Int. Cl.[3] A61F 9/02
U.S. Cl. 2—428 **11 Claims**



5. Goggles for use in athletic events and adapted to make a watertight seal around the eyes of the wearer comprising: a pair of eyepieces interconnected by a flexible, elastic nosepiece, each eyepiece comprising an integrally formed body, said body having a forward lens portion and a head-fitting portion contour, said contour including transverse generally incurved upper and lower portions for conforming to the forwardly facing surfaces of the human skull defining the upper and lower eye socket margins of the user and upstanding inside and outside excurved portions for conforming to the forwardly facing skull surfaces defining the inside and outside margins of the eye socket of the user in the vicinities of the nose and temporal areas of the skull, an eye socket contacting surface defined along said incurved and excurved portions, said surface sloping radially forward and outward toward the front of said goggles in the areas of said upper, inner and lower portions of said contour for producing a radially outward pressure on the eye socket of the user and sloping radially rearwardly and outwardly toward the rear of the goggles in the area of the outer portion of said contour, and a head band attached to and extending between the outer sides of the eyepieces for producing radial inward pressure on the temporal eye socket area of the user, the adjacent ends of said excurved and incurved portions as well as adjacent portions of said forwardly and rearwardly sloping surfaces merging smoothly together independent of abrupt changes in slope and radius of curvature.

4,264,988
PROTECTIVE SPLASH GOGGLE
Paul B. Specht, Wilmette, Ill., assignor to Vallen Corporation, Houston, Tex.
Filed Nov. 4, 1977, Ser. No. 848,514
Int. Cl.[2] A61F 9/02
U.S. Cl. 2—431 **8 Claims**



1. A protective goggle for protecting the eye area of a wearer's face from the entry of chemical splash or other foreign substances, comprising:

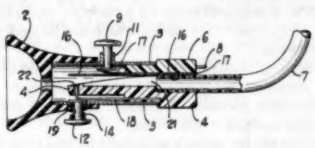
a goggle frame and lens, said goggle frame including a front portion having means for mounting said lens and a rear portion having a periphery contoured to engage the face of a wearer, said goggle frame including a top portion for positioning approximately above the eyes of the wearer and a bottom portion for positioning approximately below the eyes of the wearer;

said goggle frame having a frame opening therein to allow the transfer of air into or out of the goggle frame;

shield means mounted onto said goggle frame over said frame opening for providing a shield opening in fluid communication with but spaced from said frame opening; and

said goggle frame including fluid drain means recessed in said goggle frame surface and positioned between said goggle frame opening and said shield opening and extending outwardly of said shield means for preventing fluid flow through said goggle frame opening and for transferring fluid entering said shield opening away from said goggle frame opening and outwardly of said shield means to thereby substantially prevent the undesirable entry of chemical splash or other foreign materials through the goggle frame opening into contact with the eyes of the wearer.

4,264,989
ARTIFICIAL LARYNX
Jack P. Wiley, P.O. Box 136, Linden, Tex. 75563
Filed Oct. 22, 1979, Ser. No. 86,735
Int. Cl.[3] A61F 1/20
U.S. Cl. 3—1.3 **10 Claims**

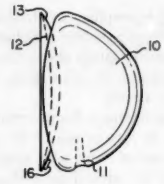


1. An artificial larynx comprising a sound chamber having an air inlet, an outlet for air, an air discharge element communicating with said outlet, a tone-producing element inside said chamber, said tone-producing element having an edge that is vibratable against a receptor element and vibratable in the human voice range in response to air flow from said inlet, and spreader means for spreading said vibratable edge away from said receptor element.

4,264,990
MAMMARY PROSTHESIS
Robert S. Hamas, 7070 Forward Ave., Apt. 808, Pittsburgh, Pa. 15217
Continuation-in-part of Ser. No. 6,117, Jan. 24, 1979, abandoned. This application Jun. 28, 1979, Ser. No. 53,051
Int. Cl.[3] A61F 1/03
U.S. Cl. 3—36 **33 Claims**

1. A mammary prosthesis comprising a soft front envelope of an inert elastomer for containing an inert fluid material and a backing of an inert polymeric material, said backing being sized and defining at least one enclosed volume for receiving a

material in said enclosed volume of said backing to rigidify the backing sufficiently to prevent the contraction of scar tissue



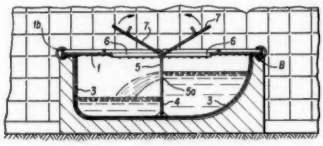
around the prosthesis from pulling the prosthesis into a hard shape.

4,264,991

FOLDABLE BATHTUB LINER TANK

Raffaele Lasalandra, Via Di Vagno, 118, Mola di Bari, Italy

Filed May 24, 1979, Ser. No. 42,105
Claims priority, application Italy, May 25, 1978, 3412/78[U]
Int. Cl.³ A47K *3/02, 3/06, 3/14;* **B65D** *37/00*
U.S. Cl. 4—514 **4 Claims**



1. A foldable tank for use in a bathtub comprising

a cover and support plate having a perimeter, an underside surface and apertures, said plate being adapted to be supported at said perimeter by a bathtub, said plate comprising a hinge and two pieces which are hingedly connected therewith;

a flexible and bendable sheet formed and sized to conform to the interior surface of said bathtub thereby to transfer the hydrostatic pressure of a liquid contained therein to said interior surface when in use;

joining means for joining said sheet to said plate at a suitable distance from said perimeter on said underside surface of said plate parallel to said perimeter, said means including a strip of curved shape forming a fluting such that its surface facing the corresponding edge of said plate can act to maintain said sheet in tight contact and a tensioning elastic located in the center of said fluting formed by the concavity in the shape of said strip which is bent around the edges of said plate; and

covers for said apertures;

said plate being foldable along said hinge enclosing said sheet between said pieces thereby occupying minimal space when not in use.

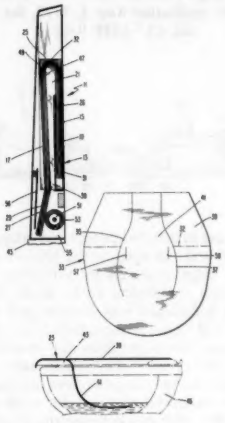
4,264,992

PAPER SHEET CARTRIDGE

Gerardus M. Tromp, Van Alkemadelaan 1132, The Hague, Netherlands

Filed Oct. 25, 1979, Ser. No. 88,383
Int. Cl.³ A47K *13/14*
U.S. Cl. 4—244 **5 Claims**

1. A paper sheet cartridge for use in a device which dispenses single sheets of paper for use in covering toilet seats, said sheets having an outer portion adapted to rest on and cover said toilet seat and a central tongue adapted to hang downwardly from said outer portion, said cartridge comprising a flat, elongated container having top and bottom walls, side walls, and an open end, a partition in said container extending parallel to said top and bottom walls, a stack of said paper sheets in said container having one end extending through said open end and outwardly of said container, said paper sheets being folded inside said container and having their other end positioned behind said partition, and means carried by said container penetrating said paper sheets at said central



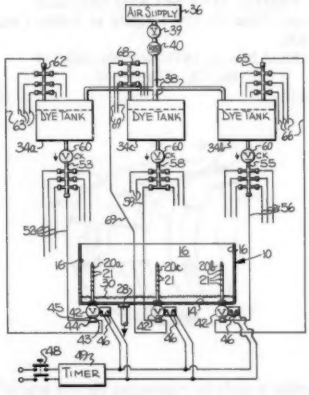
tongue and holding said paper sheets in said container, said penetrating means allowing the innermost of said folded sheets to be withdrawn from said container by applying an outward pulling force on said one end of said innermost folded sheet, whereby said innermost folded sheet tears away from said penetrating means and emerges from said container.

4,264,993

METHOD FOR SPACE DYEING YARN

Danny M. Freeman, Dalton; Milton M. Knight, Jr., Calhoun; Clarence M. Payton, Adairsville; Robert S. Simpson, and Howard B. Smith, Jr., both of Calhoun, all of Ga., assignors to Calhoun Yarn Services, Inc., Calhoun, Ga.

Filed Jul. 7, 1978, Ser. No. 922,539
Int. Cl.³ D06B *5/20*
U.S. Cl. 8—149 **9 Claims**



4. A method for space dyeing yarn which is characterized by essentially random and relatively short colorband lengths, and comprising the steps of

penetrating a loosely gathered package of yarn at spaced apart locations with a plurality of apertured nozzles, and then

injecting an atomized spray of dye and a gas from each of the nozzles and such that the dye contacts a portion only of the yarn, and including separately supplying the dye and gas under substantially equal pressures to each of the nozzles at a point located immediately adjacent one end of each nozzle, to thereby assure that both the dye and gas will be injected from the nozzles and without an initial non-atomized squirt of dye being emitted therefrom.

4,264,994

ARTICULATED FLIPPERS FOR HANDS AND FEET, WITH A SURFACE VARIABLE DURING SWIMMING

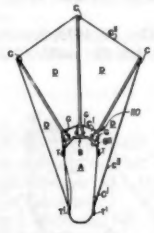
Giovanni M. Carbone, Via Candore, 59, Messina, Italy

Filed Jul. 5, 1978, Ser. No. 921,992

Claims priority, application Italy, Jul. 6, 1977, 18704 A/77; Jun. 21, 1978, 49970 A/78

Int. Cl.[3] **A63B** *31/10*

U.S. Cl. 9—309 **26 Claims**



26. An articulated flipper for use on the foot of a swimmer comprising:

(a) a shoe to be worn on the foot of the swimmer including a forward toe portion and sole portion, said sole portion being aligned with the bottom of the swimmer's foot and said forward portion being disposed in front of the swimmer's foot, said forward portion having a predetermined size and shape;

(b) a flipper assembly comprising a first flexible membrane and at least two flipper ribs, said first membrane being supported on said said ribs;

(c) a flipper support comprising a base with a first side being sized and shaped to receive and conform to said forward portion of said shoe, a raised edge extending upwardly from said base and along said first side, guide means operable to receive and secure said rib to said flipper support, and means to pivotably secure said rib to said support thereby to pivotably mount said flipper assembly to said flipper support;

(d) connecting means connecting said flipper support and said shoe, with said first side and said shoe forward portion in engagement;

(e) spring means disposed between said flipper assembly and said flipper support normally biasing said flipper ribs into substantially parallel alignment with said shoe sole portion;

(f) first reinforcing edge means disposed along and reinforcing the outer and inner periphery of said first membrane;

(g) tensioning means provided on the sides of said shoe sole portion to fix and tension said first reinforcing edge means.

4,264,995

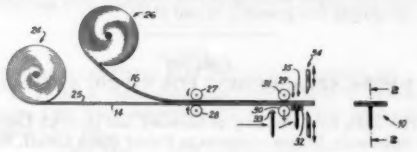
INSULATION SUPPORT FIXTURE AND METHOD OF MAKING THE SAME

Milton Hinden, Massapequa, N.Y., assignor to Duro Dyne Corporation, Farmingdale, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,178

Int. Cl.[3] **B21G** *3/10*

U.S. Cl. 10—1 R **4 Claims**



1. The method of manufacturing a thermal insulation hanger comprising the steps of providing an elongate band of metallic sheet stock material having a first and second surface, providing a metallic pin member sharpened at one end, weldingly connecting the other end of said pin member to said first surface of said stock material, providing a roll of adhesive tape material having on both of its faces a pressure sensitive adhesive substance, connecting one adhesive face of said tape material with said second surface of said stock material at an area in registry with said pin member while said second surface is in a heated condition as a result of said welding operation, thereby adhesively to connect said tape to said band, and thereafter effecting a transverse cut through said band and attached tape to sever an increment of said band and tape carrying said connected pin thereby to provide a thermal insulation hanger member.

4,264,996

SUSPENSION-CABLE SUPPORT SADDLE FOR TRACK-TYPE SUSPENDED RAILWAY

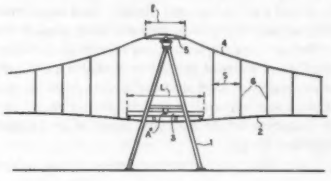
Rudolf Baltensperger, Alte Kaiserstuhlstr. 157, CH 8181 Höri, and Hans B. Pfister, Frohhaldenstr. 20, 8120 Bülach, both of Switzerland

Filed Nov. 1, 1978, Ser. No. 956,652

Claims priority, application Switzerland, Nov. 14, 1977, 13831/77

Int. Cl.[3] **E01D** *11/00*

U.S. Cl. 14—21 **8 Claims**



1. In a suspended railway having

a tower;

a suspension cable supported at the top of said tower and lying generally at said tower in a vertical plane; and

a track hung from said suspension cable and lying generally in said plane thereof,

the improvements comprising:

a beam at said tower above said track and below said cable and positioned to bow said track when unloaded downwardly at said tower;

a saddle at said top of said tower having an upper surface forming an upwardly open seat receiving and supporting said suspension cable,

having a length in said plane equal to at least one-third of the length of said beam in said plane,

having a central upwardly convex cable-engaging section of a predetermined relatively large radius of curvature, and

having a pair of upwardly convex end cable-engaging sections flanking said central section and of predetermined relatively small radii of curvature;

means on said tower for limited horizontal displacement of said saddle in said plane relative to said tower; and

means for limited pivoting of said saddle on said tower about an upright axis generally in said plane.

4,264,997

WIPING ARRANGEMENT FOR WIPING A VEHICLE WINDOW

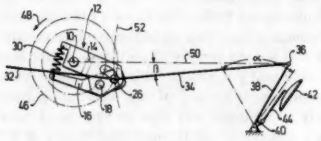
Erich Kolb, Bühl, Fed. Rep. of Germany, and Heinrich Laurent, Strasbourg, France, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 33,834

Claims priority, application Fed. Rep. of Germany, May 9, 1978, 2820104

Int. Cl.³ B60S *1/24*

U.S. Cl. 15—250.29 **9 Claims**



1. A wiping arrangement for wiping a vehicle window, comprising a rotatable output shaft; wiping means including at least one wiper shaft arranged for performing a swinging movement, and a wiping element connected with said wiper shaft for joint swinging movement therewith; swinging drive means operative for converting the rotary movement of said output shaft into the swinging movement of said wiper shaft and including a crank member connected with said output shaft and including a first lever, a rocker arm arranged to swing about a pivot point and connected with said wiper shaft, and a swingable connecting rod having two end portions one of which is pivotally connected with said crank member, whereas the other end portion is pivotally connected with said rocker arm by a hinge; and means for allowing swinging of said connecting rod about said hinge even when the arrangement is blocked in the region behind said wiper shaft, so that said connecting rod can swing and thereby said crank member can rotate despite such blocking, said allowing means including at least one further hinge which allows temporary deflection of at least one element located upstream of said wiper shaft, a spring which is arranged so that said deflection is performed against force of said spring, and a second two-arm lever which is pivotally connected with said first lever of said crank member by said further hinge.

4,264,998

WINDSHIELD WIPER FLEXOR

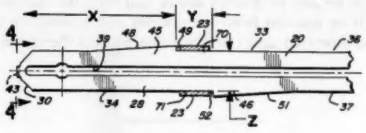
Donald W. Stratton, St. John, Ind., assignor to The Anderson Company of Indiana, Gary, Ind.

Filed Jul. 2, 1979, Ser. No. 54,161

Int. Cl.³ B60S *1/02*

U.S. Cl. 15—250.42 **11 Claims**

1. A flexor element (**20**) comprising an elongate member (**28**) having opposed axial ends (**30,31**) and opposed lateral edges (**33,34**) extending between said axial ends, said lateral edges said parallel to each other over a portion thereof and defining tabs (**45,46**) and indents (**55,56**) over a portion of the remainder thereof, one edge (**33**) having a tab (**45**) spaced from one end (**30**) with a skewed edge portion (**48**) extending laterally outward and axially away from said one end to define a first external shoulder (**49**) at the inward end thereof, said one edge also having an indent (**55**) spaced from the other end (**31**) with a skewed edge portion (**58**) extending laterally inward and axially toward said other end to define a first internal shoulder (**59**) at the inward end thereof, the opposite edge (**34**) having a tab (**46**) spaced from said one end with a skewed edge portion (**51**) extending laterally outward and axially toward said one



end (**30**) to define a second external shoulder (**52**) at the outward end thereof which is axially spaced inward of said first external shoulder, said opposite edge (**34**) also having an indent (**56**) spaced from said other end (**31**) with a skewed edge portion (**61**) extending laterally inward and axially away from said other end (**31**) to define a second internal shoulder (**62**) at the outward end thereof which is axially spaced inward of said first internal shoulder (**59**).

4,264,999

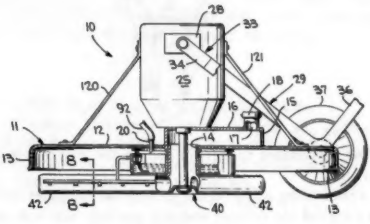
ROTARY FLOORING SURFACE TREATING DEVICE

Clifford L. Monson, 49-789 Kam Hwy., Box 452, Kaawa, Hi. 96730

Filed Oct. 30, 1979, Ser. No. 89,486

Int. Cl.³ A47L *11/34*

U.S. Cl. 15—321 **13 Claims**



1. A rotary flooring surface treating device which is movable on and over the surface to be treated, said device comprising a lower carriage unit and an upper handle unit,

said lower carriage unit including a shroud means, a drive means and a wand means;

said shroud means including a generally disc-shaped cover part having a skirt extending downwardly from the periphery thereof and an opening therethrough at the center thereof, said shroud means also including means forming a vacuum chamber positioned on the upperside of said cover part so as to enclose said opening, said vacuum chamber including means forming a port for sealing attachment thereto of one end of a flexible hose which is connected at its other end to a vacuum generating means, said shroud means also including an annular vacuum seal means extending downwardly from the underside thereof so as to enclose said opening, said seal means being capable of forming a substantially vacuum-tight seal with an upper part of a hollow cylindrical portion of a wand means positioned therein, yet allow for free rotation of said upper part therein, said shroud means also including a treating solution feed pipe extending downwardly through said cover part at a point radially outwardly of said opening therein, the upper portion of said feed pipe being sealingly connectable to a hose for the feed of treating solution thereto;

said drive means including a motor positioned on top of said vacuum chamber and fixedly connected to said shroud means, said motor including a rotatable drive shaft sealingly extending downwardly through said vacuum chamber and through said opening in said cover part;

said wand means, which is fixedly attached to said drive shaft of said motor, including a hollow cylindrical portion whose upper part is generally sealingly yet rotationally mounted within said annular vacuum seal means and multiple radially-extending arms, said arms each including a radially-extending vacuum duct means with bottom vacuum slot, each of said vacuum duct means being operatively connected to the lower part of said hollow cylindrical portion, and a discharge pipe with spray nozzles attached to the side of each vacuum duct, said wand also including a doughnut-shaped pan positioned on the outside of said hollow cylindrical portion and on top of said wand arms, said pan being fed with treating solution from said feed pipe extending through said shroud cover part, said pan including delivery conduits for delivering treating solution therefrom to each said discharge pipe;

said lower carriage unit also including wheel means for movably mounting said shroud means and said wand means above the flooring surface to be treated and a bracket means for connecting said lower carriage unit to said upper handle unit;

said upper handle unit including an extension means and a handle means,

said extension means including at least one elongated extension member, one end of which is adjustably connected to said bracket means,

said handle means comprising an operator gripper means connected to said extension means adjacent the second end thereof.

4,265,000

FURNITURE HINGE

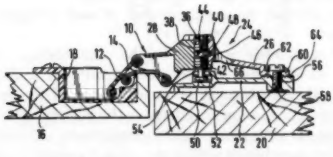
Karl Lautenschläger, Jr., Reinheim, Fed. Rep. of Germany, assignor to Karl Lautenschlager KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,774

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838722

Int. Cl.³ E05D *7/04*

U.S. Cl. 16—129 **5 Claims**



1. In combination: a mounting plate to be fastened to the supporting wall of a piece of furniture, and a supporting-wall-related element of a furniture hinge, said element being held on said plate and having an elongated body part and a head part which is adjustable relative to the body part at right angles to the pivot axis of the hinge and at right angles to the surface of the supporting wall to which said part is to be connected, guiding means connecting said head and body parts, said guiding means comprising on one of said parts a guiding projection having a broadened free end engaging a complementary guiding slot with a narrowed mouth extending in the other part in the direction in which said parts are adjustable relative to each other, a bore being provided in a plane of separation of said guiding means, said bore being half in the one and half in the other of the two parts, the half of the bore provided in the head part having a thread, a threaded spindle situated in the bore and having a thread engaging said thread of said bore, said thread of said spindle being interrupted by an annular groove, a transverse projection extending from the other bore half in the body part and engaging said groove, said other bore half being smooth, said threaded spindle protruding from the bore towards the mounting plate and terminating in a retaining head of larger diameter than said spindle, said mounting plate having a longitudinal groove which has a bottom receiving said retaining head and which is open towards the hinge pivot axis, said longitudinal groove having a narrowed mouth securing the retaining head against being lifted from the mounting plate.

4,265,001

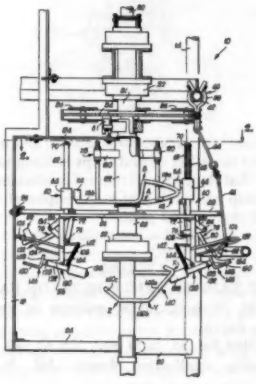
OPENING METHOD FOR POULTRY CARCASSES

Jack L. Hathorn, Springdale, Ark., and Donald J. Scheier, Kansas City, Mo., assignors to Gordon Johnson Company, Kansas City, Mo.

Filed May 22, 1978, Ser. No. 908,379

Int. Cl.³ A22C *21/06*

U.S. Cl. 17—11 **5 Claims**



1. In a method of making an enlarged opening to the body cavity of a bird by inserting a knife into a hole at the stern of the bird and then using the knife to slit the skin between the hole and the keel bone of the bird, the improvement comprising:

clamping only the thighs and legs of the bird against stationary shoulder means at a known relationship to the knife before inserting the latter into the hole of the bird while leaving the remaining trunk portion of the bird otherwise unrestrained; and

continuing to maintain the bird clamped only by its thighs and legs throughout the inserting and slitting steps so that the hole of the bird will remain properly positioned during the insertion of the knife, yet the trunk portion of the bird may yield outwardly during the slitting stroke of the knife to thereby avoid damage to the keel bone and excessive slitting of the skin.

4,265,002

MAGNETIC FASTENING MEANS

James C. Hosken, 329 Fox Hill St., Westwood, Mass. 02090

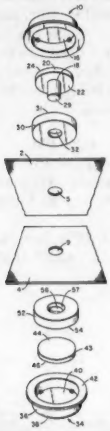
Filed Aug. 13, 1979, Ser. No. 66,086

Int. Cl.³ A44B *17/00*

U.S. Cl. 24—201 B **1 Claim**

1. Magnetic fastening means for a pair of flaps or the like comprising a ferromagnetic plate having an upper surface and a lower surface, a ferromagnetic cup having peripheral walls and an end wall, the cross sectional area of said peripheral walls being no greater than the area of the upper surface of said plate, a magnet having a first surface and a second surface of opposite polarities and a height less than that of the peripheral

walls of the ferromagnetic cup affixed within said cup such that its first surface lies against the end wall thereof, a pair of thermoplastic strips affixable to facing surfaces of the flaps, female mounting means affixed to one of said strips holding



said plate substantially parallel to said strip, and male fastening means affixed to the other of said strips holding said ferromagnetic cup such that the end wall thereof is substantially parallel to said other strip and such that said peripheral walls thereof may releasably engage said plate.

4,265,003

WARP-KNIT TAPE FABRIC FOR SLIDE FASTENERS

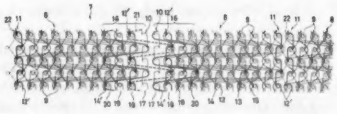
Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Jul. 31, 1979, Ser. No. 62,549

Claims priority, application Japan, Jul. 31, 1978, 53-105406[U]

Int. Cl.[3] **A44B** *19/00*

U.S. Cl. 24—205.1 C **4 Claims**



1. A slide fastener comprising:

(a) a pair of warp-knit stringer tapes each having a plurality of longitudinal wales and alternate grooves between a pair of first and second longitudinal edges of the tape, each of said warp-knit tapes including a plurality of transverse threads extending transversely across a plurality of adjacent ones of said wales, said wales including a first outermost wale at said first longitudinal edge, a reinforced second inner successive wale adjacent to said first outermost wale, a third inner successive wale adjacent to said second inner successive wale, one of said transverse threads which engages said first outermost wale being thicker than the outer transverse threads, said stringer tapes positioned with the first longitudinal edges of the stringer tapes confronting each other, and said transverse threads being effective for pulling said first outermost wale into contact with said second inner successive wale to define a combined widened wale portion;

(b) a pair of rows of coupling elements mounted on a flat side of the respective stringer tape along said first longitudinal edge;

(c) a pair of stitches of sewing threads securing the respective rows of coupling elements to the corresponding stringer tapes respectively along said first longitudinal edges, each of said stitches of sewing threads extending through one of said stringer tape at a groove between said second and third wales.

4,265,004

SEPARABLE SLIDE FASTENER

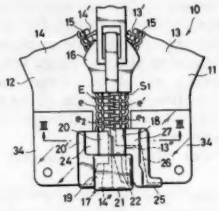
Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

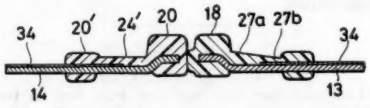
Filed May 7, 1979, Ser. No. 36,740

Claims priority, application Japan, May 19, 1978, 53/68520[U]

Int. Cl.[3] **A44B** *19/36*

U.S. Cl. 24—205.11 R **2 Claims**





1. A separable slide fastener comprising:

(a) a pair of companion stringers each having a fabric tape and a row of interlocking fastener elements mounted on a longitudinal edge of said tape;

(a) a slider slidably mounted on the rows of fastener elements for taking the same into and out of coupling engagement, said slider having a flanged opening; and

(c) a separable end stop assembly comprising:

(1) a pin member mounted on one of said companion stringers;

(2) a socket member mounted on the other stringer and having an opening receptive collaterally of said pin member therein through said slider, each of the tapes having an end portion raised above the general plane of the tape in transverse and longitudinal directions thereof and anchored within one of said pin and socket members; and

(3) a reinforcing sleeve portion integrally formed with said pin member and having a slant thick region extending longitudinally along and adjacent to said pin member, and a thin region disposed remotely from said pin member for registration with and through said flanged opening when said pin member is inserted through said slider.

4,265,005

U-BOLT CLAMP SADDLE CONSTRUCTION

John E. Heckethorn, Dyersburg, Tenn., assignor to Heckethorn Manufacturing Company, Dyersburg, Tenn.

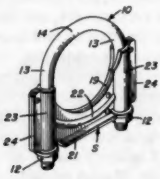
Filed May 12, 1977, Ser. No. 796,217

Int. Cl.[3] **B65D** *63/00;* **F16L** *33/10*

U.S. Cl. 24—277 **6 Claims**

5. A saddle for a U-bolt clamp comprising two thicknesses of

sheet metal secured together in face-to-face relation by spot welding, said saddle having a central flat web provided with upright parallel tubular portions adjacent the laterally opposite ends thereof for slideably receiving the threaded legs of a U-bolt, the upper edge of said web between said tubular portions being of generally semicircular shape to encircle approxi-



mately one-half of the circular periphery of a pair of telescopically engaged tube sections, the lower edge of said web being defined by a pair of flanges turned outwardly in opposite directions from the plane of said web and extending substantially throughout the width of said web between said bolt-receiving portions, a portion adjacent the lower edges of the web being secured together by spot welding.

4,265,006

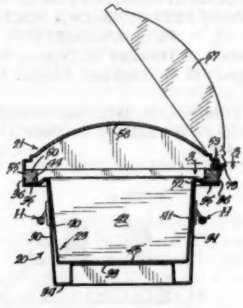
DISPLAY AND BURIAL SYSTEM

Manfred E. Angermann, Lake Geneva, Wis., assignor to Citadel Management Services, Inc., Lake Geneva, Wis.

Filed Jan. 24, 1980, Ser. No. 115,114

Int. Cl.³ A61G *17/00*

U.S. Cl. 27—14 **9 Claims**



1. A display and burial system including a display base having an appearance similar to a casket base and having support means along the upper perimeter thereof, a reusable casket-like movable lid unit removably supported by said support means to enable viewing of a body, and a cover unit positionable on said support means in place of said lid unit after viewing whereby the display base and cover unit provide an enclosed structure for subsequent entombment, cremation, or burial.

4,265,007

TOOL FOR RASPING

Marcel Delattre, Claix, and Gerard Romagnolo, Eybens, both of France, assignors to Eurotungstene, Grenoble, France

Filed Feb. 26, 1979, Ser. No. 15,244

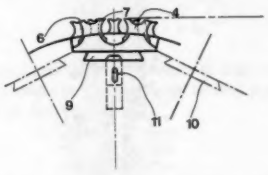
Claims priority, application France, Feb. 28, 1978, 78 06564

Int. Cl.³ B26D *1/12*

U.S. Cl. 29—79 **9 Claims**

1. A rasping tool, for use particularly in the preparation of the exterior surface of a tire to be retreaded, comprising a cylindrical drum rotatable in opposite directions on its axis, protruding cutting elements on the exterior surface of the drum, said cutting elements being able to act in both directions of rotation, an assembly of detachable bars disposed regularly about the exterior surface of the drum parallel to the drum axis, each one of the bars having at least one transverse row of cutting elements fixed thereto, each cutting element of a same row having two parallel cutting edges oriented in opposite directions relative to, and making the same acute angle with the axis of the drum, the cutting elements of an adjacent row equally presenting two cutting edges making, with the axis of the drum, angles essentially the same as the preceding row but oppositely directed, and means for a quick assembly of the detachable bars on the drum, said means for quick assembly comprising a dove-tail section on each bar which is received within a corresponding groove in the drum, said groove opening through a first side of the drum, the groove and dove-tail section each having a decreasing width from the first side of the drum to the other.

7. A rasping tool, for use particularly in the reparation of the exterior surface of a tire to be retreaded, comprising a cylindrical drum rotatable in opposite directions on its axis, protruding



cutting elements on the exterior surface of the drum, said cutting elements being able to act in both directions of rotation, an assembly of detachable bars disposed regularly about the exterior surface of the drum parallel to the drum axis, each one of the bars having at least one transverse row of cutting elements fixed thereto, each cutting element of a same row having two parallel cutting edges oriented in opposite directions relative to, and making the same acute angle with the axis of the drum, the cutting elements of an adjacent row equally presenting two cutting edges making, with the axis of the drum, angles essentially the same as the preceding row but oppositely directed, and means for a quick assembly of the detachable bars on the drum, said means for quick assembly comprise a dove-tail section on each bar, a corresponding groove in the drum, said groove having an opening through a first side of the drum for slidably receiving said dove-tail section therethrough when assembling said bar on the drum, and removing said bar from the drum, and a pressure retractable catch mounted on the drum adjacent the first side thereof and spring biased to an outwardly moved position to selectively block the groove opening and retain the dove-tail section in the groove.

4,265,008

TOOL FOR PLACING SELF-DRILLING DOWELS

Wolfgang Lippacher, Breitbrunn, and Gerhard Teger, Munich, both of Fed. Rep. of Germany, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Nov. 27, 1979, Ser. No. 97,855

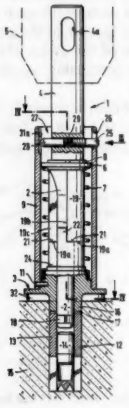
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851896

Int. Cl.³ B23P *19/04*

U.S. Cl. 29—240 **14 Claims**

1. Tool for inserting and setting a self-drilling dowel, consisting of a drill member and a spreading member, in a receiving material, comprising an engaging member arranged to engage and apply percussive and rotative forces to the drill member for inserting the drill member into the receiving material, a plunger for applying percussive force to the spreader member for driving the spreader member relative to the drill member for setting the drill member within the receiving material, said plunger being movable relative to said engaging member in the

direction of insertion of the dowel for effecting the setting of the dowel, a transmission member including an insert shank which is engageable within a driving device, said transmission member arranged to transmit percussive force from the driving device to said engaging member and plunger and to selectively transmit rotative forces to said engaging member and plunger at the same time that percussive forces are transmitted, wherein the improvement comprises that said transmission member and plunger are formed as an axially extending unit with said transmission member having a first end formed by



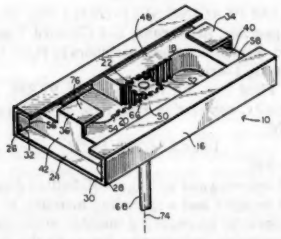
said insert shank adapted to be inserted into a driving device and a second end from which said plunger extends axially, said transmission member having an axially extending surface extending between the first and second ends thereof, said transmission member having at least one axially extending projection projecting radially outwardly therefrom, said projection having a first axially extending side, a second axially extending side, and a radially extending end, and said first axially extending side and said radially extending end being engageable with said engaging member for effecting the transmission of percussive and rotative forces.

4,265,009

DUCT ASSEMBLING TOOL

Glenn E. Mann, 10812 Highcliff Dr., Knoxville, Tenn. 37922

Filed Dec. 22, 1978, Ser. No. 972,477
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—244 **4 Claims**



1. A tool for assembling two duct sections, each duct section having at least one flanged end, said tool suitable for use with duct sections of any selected cross-section and comprising:

a housing having a base plate with first and second parallel edges, and first and second channel members attached to said parallel edges such that said channel members are parallel and open inwardly and toward each other;

a toothed gear rotatably attached to said base of said housing, and located substantially equal-distant between said first and second parallel channel members;

first and second carrier members, each having a toothed rack portion and a clasp support portion at substantially a right angle with said rack portion, said first and second carrier member being supported by said housing such that each of said rack portions are controlled, one each, by said first and second channel members, and such that said toothed racks mesh with said rotatably toothed gear so that rotation of said tooth gear imparts motion to said first and second carrier members along a selected line of travel;

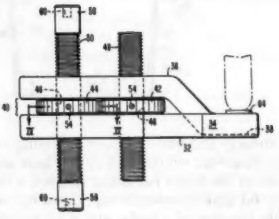
first and second L-shaped clasps, having first and second legs, said first leg of each of said clasps being affixed to said clasp support portion of said first and second carrier members respectfully and said second leg of each of said clasps having a shape suitable for engaging said flanges of said duct sections, said first and second L-shaped clasps being attached to said carrier members such that said second legs are substantially parallel with said base of said housing and extend toward each other so that movement of said carrier member along said selected line of travel varies the distance between said first and second L-shaped clasps.

4,265,010

METHOD AND APPARATUS FOR ADJUSTING THE ELEVATION OF FUEL RODS IN A NUCLEAR REACTOR FUEL ASSEMBLY

Glenn D. Doss, and Theodore W. Nylund, both of Columbia, S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 24, 1978, Ser. No. 963,596
Int. Cl.[2] B22D *19/10*; B23P *19/04*; B66F *3/18*; G21C *19/20*
U.S. Cl. 29—402.01 **7 Claims**



1. The method of adjusting the level of a fuel rod in a fuel assembly for a nuclear reactor comprising the steps of:

locating a gap adjusting tool between a nozzle in the assembly and the end of a fuel rod appearing at an incorrect level;

placing a surface of the adjusting tool in direct contact with the exposed surface of a nozzle adapter plate;

placing an end of the adjusting tool over an end of the fuel rod which appears at an incorrect level;

adjusting the tool in a manner such that the plate thereof which engages the end of the fuel rod moves in a direction to force the fuel rod axially into a position where the end thereof appears at the same level as the ends of other fuel rods in the assembly; and

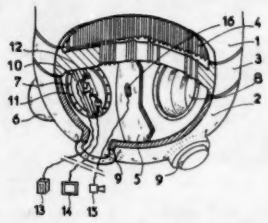
removing the tool from said assembly.

4,265,011

REMOTE-CONTROLLED SCREWING DEVICE

Bernard Lebouc, Dinan, France, assignor to Framatome, Courbevoie, France

Filed Dec. 28, 1978, Ser. No. 974,508
Claims priority, application France, Jan. 30, 1978, 7802506
Int. Cl.³ B23P *15/26, 19/04*
U.S. Cl. 29—720 **4 Claims**



1. A screw fastening apparatus for fastening screws of a sealing cover for a circular orifice within a nuclear steam generator, onto an annular bearing seat disposed at the circumference of the orifice and having threaded bores arranged in a circle, the cover being provided with fixed screws arranged in a circle and which are engageable in the bores, wherein:

there is provided a support plate;

said support plate being adapted to be affixed to the cover;

a pivot defining an axis and being mounted on said support plate whereby said axis is perpendicularly extendable to the plane of the bearing seat;

an arm pivotable about said pivot axis, and extending perpendicular thereto;

a screwing head at the end of said arm, having an axis perpendicular to said arm and arranged whereby the axis thereof is perpendicular to the plane of the bearing seat and intersects the circle of the screws;

a screw key mounted on said screwing head for movement in the direction of said axis of said screwing head;

drive means for rotating said arm about said pivot;

drive means for rotating said screw key about said axis of said screwing head;

drive means for moving said screw key axially of said screwing head;

and

a television circuit for observing operation of said screwing drive including a camera carried by said arm and arranged with its axis of sight orientated towards said screw key, and a monitoring screen for viewing said operation of said screwing device.

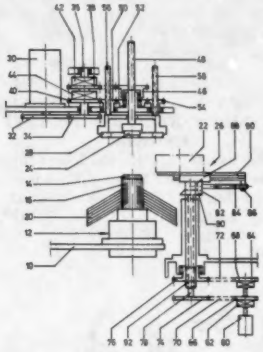
4,265,012

DEVICE FOR COLLECTING WINDINGS IN STATORS OR THE LIKE

Willi Muskulus, Frankfurt am Main, Fed. Rep. of Germany, assignor to Balzer & Droll KG, Niederdorfelden, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,620
Int. Cl.³ H02K *15/06*
U.S. Cl. 29—736 **12 Claims**

1. Apparatus for the collecting of windings in a stator comprising a collecting tool comprising lamellae disposed in a ring, an aligning star piece, means for moving a stator sheet packet having an aperture therethrough in position adjacent the free ends of said lamellae, means for moving said aligning star piece from a retracted position through said aperture and into an alignment position between said lamellae to align said stator sheet packet and said ring of lamellae and means for automatically delivering stator sheet packts for movement into adjacency with the free ends of said lamellae comprising a magazine for storing stator sheet packets and a conveyor for moving stator sheet packets from said magazine to said stator sheet packet moving means, said magazine comprising a set of spaced roller trains on which the stored stator sheet packets are movable to said conveyor means, the spacing between said



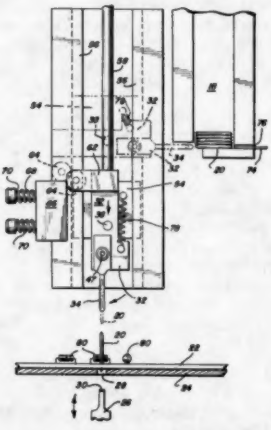
roller trains being wider than the aperture in said stator sheet packet to accommodate groove insulation located in said aperture and extending therebeyond.

4,265,013

APPARATUS FOR DRIVING PINS INTO A PRINTED CIRCUIT BOARD AND THE LIKE

Vincent B. Brown, Prospect Heights, and Charles A. Kozel, McHenry, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed May 10, 1979, Ser. No. 37,741
Int. Cl.³ H05K *3/32*
U.S. Cl. 29—739 **13 Claims**



1. An apparatus for driving pins into a printed circuit board and the like, which comprises: table means for receiving and retaining a board into which the pins are to be driven; magazine means for holding a supply of said pins in a position parallel to the plane of said table, and receiver means, said receiver means being pivotably movable to receive a pin from said magazine means in a first pivotal position, and to pivot said pin into transverse relation with said table means in a second pivotal position; said receiver means being movable in slide means along a path transverse to said table for advancement and retraction of the receiver means toward and away from the

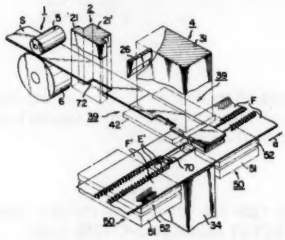
table and board, and cam means for automatically pivoting said receiver into said second pivotal position as it is advanced in said slide means toward the table and board; loading means for inserting pins into said receiver means; and means for moving said receiver means while in the second pivotal position to directly drive the pin into the board by advancement of said receiver means toward the board.

4,265,014

APPARATUS FOR PRESS-BONDING A REINFORCED TAPE TO A SLIDE FASTENER WITH A SEPARABLE END STOP

Keiichi Yoshieda, Kurobe, and Kazuki Kuse, Toyama, both of Japan, assignors to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,602
Claims priority, application Japan, Dec. 30, 1977, 52/160361
Int. Cl.³ B23P *21/00*
U.S. Cl. 29—766 **4 Claims**



1. An apparatus for press-bonding a reinforcement tape of thermoplastic resin film onto a space section of a continuous length slide fastener chain having a series of space sections at intervals, comprising:

(a) a forming punch;

(b) a forming die disposed below said forming punch, normally spaced therefrom and being relatively movable toward and away from said forming punch;

(c) a pair of chain guide units disposed one on each side of the forming die for guiding and holding the fastener chain as said chain moves along a path;

(d) a tape guiding and holding unit having a pair of guide rams movable in a direction perpendicular to said path for entering and coming out of the space between said forming die and said forming punch;

(e) a feeding unit for feeding the tape into said tape guiding and holding unit;

(f) a tape punching unit disposed between said tape feeding unit and said tape guiding and holding unit and having a vertically movable tape punch; and

(g) a tape cutting unit disposed between said tape punching unit and said tape guiding and holding unit.

4,265,015

ADJUSTABLE RAZOR WITH BLADE CLEANING MEANS

Tamoru Asano, Seki, Japan, assignor to Kai Cutlery Center Company Limited, Gifu, Japan

Filed Jun. 27, 1979, Ser. No. 52,215
Claims priority, application Japan, Feb. 28, 1979, 54-23798
Int. Cl.³ B26B *21/16*
U.S. Cl. 30—41 **10 Claims**

1. A razor comprising:

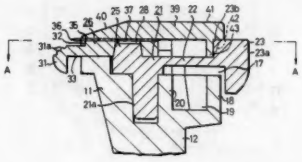
a base provided at the tip of a handle;

a top plate mounted on said base through attaching means;

a blade support disposed between the top plate and the base and adapted to receive a razor blade on its upper surface;

operating means for moving said blade support back and forth between the base and the top plate by being operated from outside the razor base, said operating means comprising an operating member rotatably supported by its own support shaft at the central rear portion of the base and a slot formed at the center of the blade support, said operating member comprising a support shaft, an operating lever extending rearwardly from the support shaft,

a knob provided at the rear end of the lever and projecting rearwardly from between the base and the top plate, and



an eccentric pin provided on the top of the support shaft, said slot extending perpendicular to the direction in which the blade support is moved;

and a guard member provided in front of the blade support and projecting forwardly beyond the cutting edge of the razor blade mounted on the blade support, said guard member extending parallel with the cutting edge.

4,265,016

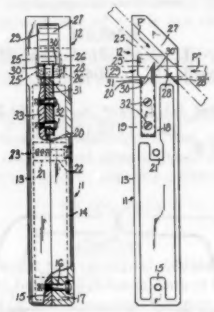
CABLE SPLITTER

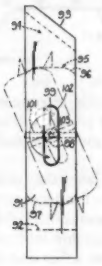
Lucien C. Ducret, 8 Apache Pl., Riverside, Conn. 06878

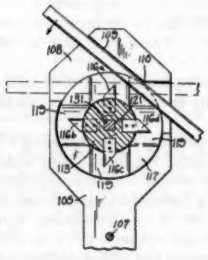
Continuation-in-part of Ser. No. 909,124, May 24, 1978. This application Jul. 27, 1979, Ser. No. 61,264
Int. Cl.³ B21F *13/00*
U.S. Cl. 30—90.8 **6 Claims**

1. A cable splitting tool (according to claim **2** wherein) comprising an elongated handle portion and a hollow head portion at one end of the handle portion, the head portion including spaced parallel internal side walls and an internal top having a rear edge, said walls defining a cutting chamber, at least one pointed slitting blade extending into said chamber from the direction of the handle portion, the top wall of the chamber being so disposed that its rear edge defines the upper limit of a lateral opening, said edge lying substantially in a plane which passes through the blade point and is perpendicular to the length of the handle, the angle of the top wall relative to said plane being such that no point on the top wall surface is spaced from the point of the splitting blade by less than the thickness of a cable to be slit, the tool including a plurality of

blades and means for mounting said blades in a predetermined position in the handle portion, and the blade mounting means







(is) being an elongated turret pivotally mounted in the handle and provided with blades at each end.

4,265,017

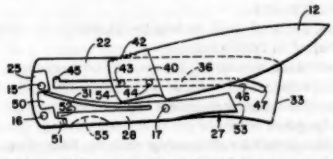
POCKET KNIFE WITH RETRACTABLE BLADE

Walter W. Collins, Rock Hill, S.C., assignor to Jenkins Metal Corporation, Gastonia, N.C.

Filed Sep. 7, 1979, Ser. No. 73,266

Int. Cl.[3] **B26B** *1/00*

U.S. Cl. 30—162 **14 Claims**



1. A knife comprising a handle and a blade mounted within the handle and selectively movable into fully extended operative position beyond the handle and into fully retracted or inoperative position within the handle, said knife including spring means fixed within the handle beneath the blade and extending axially along the length of the knife, and blade having a butt portion and means supporting the butt of the blade for axial movement in continuous engagement with said spring between the fully retracted inoperative position and the fully extended operative position of the blade, said means supporting the butt of the blade comprising a liner on each side of the blade, said liners having longitudinally extending slots defining a trackway and first and second guide pins fixed to the butt of the blade and extending through the slots in the liner.

4,265,018

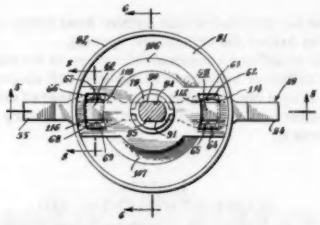
GRASS TRIMMER DEVICE

Martin O. Schrock, Baltimore; Thomas J. Howard, Jr., White Marsh, and Danny R. Jinkins, Bel Air, all of Md., assignors to Black & Decker Inc., Towson, Md.

Filed Aug. 21, 1978, Ser. No. 934,746

Int. Cl.[3] **A01D** *35/00, 50/00*

U.S. Cl. 30—276 **14 Claims**



1. A cordless, portable grass trimmer device having a single cutter blade comprising:

(a) a unitary, elongated cutter blade body formed of a strip of flexible material;

(b) said blade body have a generally rectangular shape including a length, a width and a thickness;

(c) said blade body dimensioned to provide flexibility thereof upon application of finger pressure thereto in a direction normal to a plane of the body which includes said length and width, and, to exhibit stiffness in the direction of said width;

(d) said blade body having a rotational axis normal to said plane and centrally located along said length;

(e) said blade body having first and second cutting segments symmetrically located about said axis at distal, opposite ends of the length of said body;

(f) means for mounting said blade body for rotating said blade body in a predetermined course about said rotational axis;

(g) said blade body subject to deflection from rotation in said predetermined course upon impact with an object;

(h) said blade mounting means supporting and restraining said blade over a segment which is at least 60 percent of the length of said blade, said supported segment including said axis of rotation whereby rotation of said blade is maintained in said predetermined course upon impact with an object; and

(i) an electrically energized motor means for rotating said blade.

4,265,019

FILAMENT VEGETATION TRIMMER

Lauren G. Kilmer, 1927 E. 35th Pl., Tulsa, Okla. 74105

Continuation-in-part of Ser. No. 771,400, Feb. 23, 1977, abandoned, which is a continuation of Ser. No. 958,518, Nov. 7, 1978. This application Nov. 7, 1978, Ser. No. 958,519

Int. Cl.[3] **A01D** *50/00*

U.S. Cl. 30—276 **3 Claims**

1. In a filament vegetation trimmer having a rotary drive

means, a hollow shaft attached to the drive means, said shaft terminating at a trimming or gyrational end, a gyrator head attached to said shaft at said trimming end and having a bell-shaped opening axial with the said shaft,

means to supply the filament through said shaft and said a bell-shaped opening, the improvement comprising a transverse bar attached to said gyrator head across at least the center axis of the bell-shaped opening,

said bar to define a rotational fulcrum point for said filament and sufficient opening between said bell-shaped opening and at least one side of said bar for passage of said filament therethrough and outward to form a rotary whip for trimming.

4,265,020

GARMENT DESIGNING AID

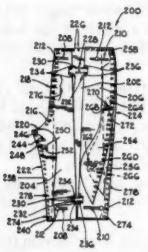
Fred W. K. R. Werber, 29 Schaumans-kamp, Reinbeck, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 853,668, Nov. 21, 1977, Pat. No. 4,156,969. This application Mar. 1, 1979, Ser. No. 16,573

Claims priority, application South Africa, Mar. 9, 1977, 77/1434

Int. Cl.[3] **A41H** *3/015*

U.S. Cl. 33—14 **9 Claims**



1. A pants design aid for assisting a person in providing a pattern for a pair of pants, including

a first template section;

a second template section which is secured to the first template section and is adjustably displaceable with respect thereto and which overlaps the first template section on one side of the first template;

a third template section which is also secured to the first template section and is adjustably displaceable with respect thereto and which overlaps the first template section on an opposite side to the second template section; and

a hip width varying means for varying the hip dimension of the pants, said hip dimension varying means comprising two pivotally displaceable members, a first member pivotally secured at one end to an upper outer corner portion of the third template section and a second member pivotally secured to the first member in the region of that part of the first member that corresponds with the hip, the two members being secured to the third member at their lower ends by means of a screw and nut, suitable slots being provided in the first and second members.

4,265,021

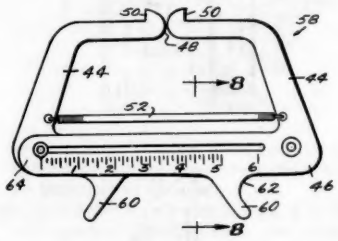
DISTANCE MEASURING INSTRUMENT

Robert A. Campbell, 167 N. Ridgeland Ave., Oak Park, Ill. 60302

Filed Jul. 2, 1979, Ser. No. 54,247

Int. Cl.[3] **G01B** *3/20*

U.S. Cl. 33—143 R **22 Claims**



1. A distance measuring instrument comprising:

a pair of substantially planar and substantially identical juxtaposed measuring members, each of said members having an elongated base;

means in operative relationship with the base of each of said measuring members for cooperation with said base of said other measuring member to hold said bases in juxtaposed and slideable relationship with each other;

an arm projecting from a first end of each of said bases, each said arm defininng a first measuring surface and further defining a second measuring surface;

first means for displaying distance measurements located on a first side of said base of a first one of said measuring members;

means in operative relationship with said measuring members for urging said first measuring surfaces toward each other;

each of said cooperating means including a first aperture and a second elongated aperture defined within each said base, a first fastener positioned within said first aperture of said first measuring member and within said second aperture of the second one of said measuring members, a second fastener positioned within said first aperture of said second measuring member and within said second aperture of said first measuring member, said fasteners holding said measuring members with said first measuring surfaces in opposed relationship with each other;

a first index in operative relationship with said second fastener and with said first display means for indicating the distance between said first measuring surfaces;

a handle projecting from the base of each of said measuring members, each of said handles projecting from each of said respective bases at a location adjacent to a second end of each of said bases, and each of said handles projecting from said bases in a substantially opposite direction from said arms; and

wherein each of said measuring members is substantially C-shaped in configuration.

12. A distance measuring instrument comprising:

a pair of substantially planar and substantially identical juxtaposed measuring members, each of said members having an elongated base;

means in operative relationship with the base of each of said measuring members for cooperating with said base of said other measuring member to hold said bases in juxtaposed and slideable relationship with each other;

an arm projecting from a first end of each of said bases, each

said arm defining a first measuring surface and further defining a second measuring surface;

first means for displaying distance measurements located on a first side of said base of a first one of said measuring members;

means in operative relationship with said measuring members for urging said first measuring surfaces toward each other;

said cooperating means including two pairs of lugs, each lug defining a recessed channel, and one pair of said lugs attached to each of said arms in position to receive and hold said other base in slideable relationship with said channels.

4,265,022

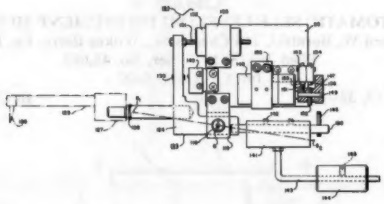
CONTOUR MEASURING APPARATUS

Hironori Noguchi, and Kenji Sakuma, both of Kawasaki, Japan, assignors to M. T. I. Corporation, Paramus, N.J.

Filed Feb. 22, 1979, Ser. No. 13,965

Int. Cl.³ G01B *7/28*

U.S. Cl. 33—174 P **17 Claims**



1. A measuring device comprising:

(a) a base for positioning an object to be measured; and

(b) a measuring apparatus joined to said base, said measuring apparatus having an arm member divided into a first and second portion by a fulcrum, said first portion having the center of gravity adjacent a first end thereof farthest from the fulcrum, said second portion having weight means provided thereon, said weight applying a weight to the second portion such that said second portion has the center of gravity adjacent a second end thereof farthest from said fulcrum, and said fulcrum thereinbetween said first and second centers of gravity and wherein said first and second centers of gravity and the fulcrum lie in a common line.

4,265,023

TURBINE BLADE GROWTH MEASURING APPARATUS AND METHOD

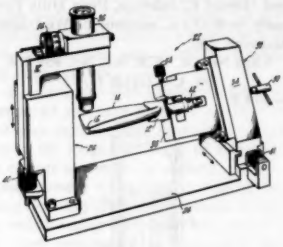
Stuart J. Frost, Bloomfield; Edward J. Riley, Somers, and Ronald F. Bogdan, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 23, 1979, Ser. No. 32,608

Int. Cl.³ G01B *11/02, 5/02*

U.S. Cl. 33—174 C **5 Claims**

1. Apparatus for measuring the growth of a turbine blade subjected to hostile environment of a turbine type of power plant in combination with the turbine blade, the blade having a concave working surface and a root section adapted to be secured in a rotary hub, a dimple in the concave working surface in proximity to but spaced from the end of the turbine blade remote from said root section, a pair of spaced apart upstanding members, one of said members having jaw means for securing the root section of the blade for holding the blade, an optical measuring means secured by said other of said members for aligning with said dimple, aligning means in said jaw means for aligning said root with a predetermined plane passing through a point in said root known to be the original distance between the center of the dimple and said plane and means for positioning said optical measuring means to align with said dimple to the new growth position of the blade



which new position is the value of said distance between the center of the dimple and said plane.

4,265,024

JIG FOR STORING ADJUSTMENT POSITIONS

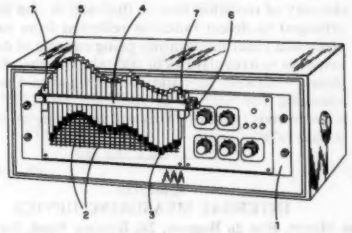
Herbert Handte, Filderstadt, Fed. Rep. of Germany, assignor to Moog GmbH, Boblingen, Fed. Rep. of Germany

Filed Mar. 31, 1980, Ser. No. 135,309

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1979, 2915668

Int. Cl.³ G01B *5/20*

U.S. Cl. 33—175 **5 Claims**



1. A jig for storing setting data of an apparatus, said apparatus having a plurality of adjacent settable sliding members the relative positions of which determine said sitting data, said apparatus also having a plurality of alignment holes, said jig comprising:

a frame;

a plurality of alignment pins mounted on said frame and adapted to be selectively inserted into said alignment holes such that said jig may be repeatedly repositioned on said apparatus at a desired location;

a plurality of bars mounted on said frame, said bars being positioned adjacent one another for independent sliding movement relative to said frame along parallel paths, each of said bars having an end face aligned with and arranged to be selectively contacted by a corresponding setting member; and

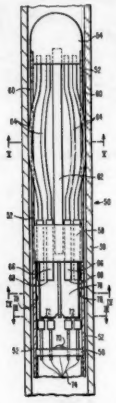
clamp means mounted on said frame and arranged to releasably hold said bars in desired relative positions.

4,265,025

INSPECTION PROBE

James W. Finlayson, Rostraver Township, Westmoreland County, and Harold P. Johnson, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 8, 1978, Ser. No. 959,034
Int. Cl.[2] G01B *11/12*
U.S. Cl. 33—178 F 10 Claims



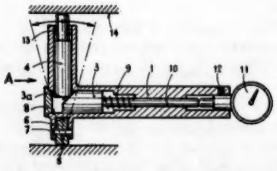
1. An inspection probe for inspecting tubes comprising:
a housing capable of being disposed in said tube;
a plurality of feeler mechanisms disposed in said housing and extending through said housing into contact with said tube and having at least one end slidably disposed in said housing for centering said probe and for detecting irregularities in said tube;
a radiation source disposed in said housing and directed toward said slidable ends for emitting radiation toward said slidable ends; and
a plurality of radiation sensors disposed in said housing and arranged to detect radiation reflected from said slidable ends, said feeler mechanisms being capable of deflecting in response to irregularities in said tube thereby changing the distance between said slidable ends and said sensors thus changing the amount of radiation reflected from said slidable ends to said sensors and indicating an irregularity in said tube.

4,265,026

INTERNAL MEASURING DEVICE

Hans Meyer, Rue du Bugnon, 24, Renens, Vaud, Switzerland

Filed Mar. 21, 1979, Ser. No. 22,501
Claims priority, application Switzerland, Apr. 5, 1978, 3632/78
Int. Cl.[3] G01B *5/12*
U.S. Cl. 33—178 R 2 Claims



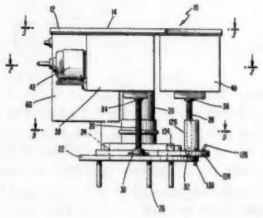
1. An internal measuring device including a measuring unit with a fixed contact member, a movable contact member supported in the measuring unit, a transmission element engaging said movable contact member, an indicator gauge mounted in said measuring unit in engagement with said transmission element and a spring acting on the movable contact member to urge it outwardly, wherein at least one of the contact members is provided with at least one roller supporting the measuring device on the bore wall to be measured at least during part of the measuring process and, as a result of its directional force, ensuring that said device is centrally located in the bore, one roller located on one side of the fixed contact member so that it supports itself on the bore wall when the device is inclined relative to the bore axis and thus carries out its centering function whereas the fixed contact member supports itself on the bore wall when the measuring units assumes its perpendicular position relative to the bore axis.

4,265,027

AUTOMATIC SELF-LEVELING INSTRUMENT MOUNT

Edward W. Burniski, 118 Charles St., Wilkes-Barre, Pa. 18702

Filed Jun. 5, 1979, Ser. No. 45,692
Int. Cl.[3] G01C *5/02*
U.S. Cl. 33—291 16 Claims



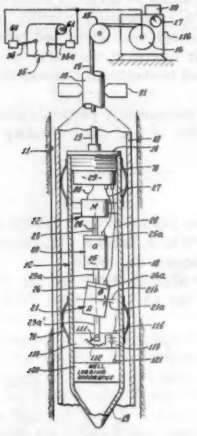
1. A self-leveling mount, comprising:
a table having a surface to be oriented parallel to a reference plane;
a stationary frame member;
a first, fixed length support arm pivotably connected between said table and said frame member;
second and third, variable length support arms pivotably connected between said table and said frame member; said first, second and third arms being oriented in a triangular array;
means entirely mounted with said table for measuring the orientation of said table relative to the reference plane;
servo means responsive to said measuring means for controlling effective lengths of said second and third support arms to orient said table parallel to said reference plane;
wherein said reference plane is a horizontal plane and said measuring means includes a pendulum suspended from a pendulum support carried by said table; and
wherein said pendulum is electrically conducting and is suspended by an electrically conducting line, said pendulum extending downwardly between first and second mutually orthogonal pairs of opposed electrical contacts, said pendulum being electrically isolated from said contacts when said table is parallel to the horizontal plane, an electrical connection being established between said electrically conducting pendulum and said contacts depending upon an angular displacement of said table relative to the horizontal plane, said servo means being responsive to said electrical connection.

4,265,028

SURVEY APPARATUS AND METHOD EMPLOYING CANTED TILT SENSOR

Brett H. Van Steenwyk, San Marino, Calif., assignor to Applied Technologies Associates, San Marino, Calif.

Filed May 7, 1979, Ser. No. 36,328
Int. Cl.[3] G01C *19/38*; E21B *47/024*
U.S. Cl. 33—304 **12 Claims**



1. In a borehole navigation apparatus, the combination comprising

(a) a carrier movable lengthwise in the borehole,

(b) means on the carrier defining an axis of rotation,

(c) a tilt sensitive device on the carrier and having a tilt sensitive axis about which tilt is sensed, said tilt sensitive axis extending in a cant direction having components respectively along said axis of rotation and also along a perpendicular to said axis of rotation, such device being rotatable about said axis of rotation, and

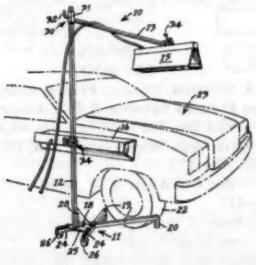
(d) drive means on the carrier for rotating said device in the same direction and through more than one complete turn about said axis of rotation, the extent of said cant remaining fixed during said rotation.

4,265,029

MOTOR VEHICLE DRYER STAND

Kenneth A. Jenkins, 3207 Lakeshore Dr., Old Hickory, Tenn. 37138

Filed Dec. 4, 1979, Ser. No. 100,254
Int. Cl.[3] F26B *23/04*
U.S. Cl. 34—39 **3 Claims**



1. A motor vehicle dryer stand for supporting one or more dryer lamps in different positions to dry the finish on a motor vehicle, comprising,

(a) a base member having a longitudinal axis, transverse dimensions, and remote and proximal end portions,

(b) said base member comprising a platform member at said proximal end portion, said platform member having a proximal edge portion,

(c) a pair of roller members depending from the proximal end portion of the base member, closely adjacent said proximal edge portion, and transversely spaced on opposite sides of the longitudinal axis of said base member to rollably engage a supporting surface,

(d) said base member comprising a pair of elongated legs projecting remotely from said platform member and having free ends forming the remote end portion of said base member and terminating in depending foot members adapted to frictionally engage the supporting surface,

(e) said free ends being spaced apart transversely on opposite sides of said longitudinal axis a distance substantially greater than the transverse spacing between said roller members and great enough to straddle the wheel of a motor vehicle, in a drying position,

(f) an upright standard having a bottom end portion fixed to said platform member along the proximal edge of said platform member, on said longitudinal axis, and between said roller members and said foot members and projecting vertically upward from said base member,

(g) an elongated lamp arm adapted to support a dryer lamp, said lamp arm being at least as long as said base member and long enough, when extending in the remote direction parallel to said longitudinal axis, to support a dryer lamp over the center portion of a motor vehicle in said drying position.

(h) clamp means adjustably securing one end of said lamp arm upon said standard at selectively different elevations relative to said base member, and

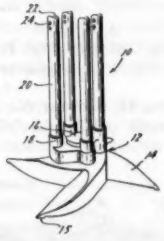
(i) a reinforcing gusset member rigidly fixed to said standard and said platform member and projecting remotely from said standard above said platform member and disposed in a vertical plane on the longitudinal axis of said base member to resist the cantilever forces exerted by said lamp arm extending remotely from said standard.

4,265,030

ARTICLE DRYER

Jon M. Smallegan, Farmington Hills, Mich., assignor to Novo Products, Inc., Farmington Hills, Mich.

Filed Jul. 6, 1979, Ser. No. 55,344
Int. Cl.[3] F26B *19/00*
U.S. Cl. 34—104 **3 Claims**



1. For an article dryer:

a housing;

a plurality of tubes extending from said housing, each tube having an inlet and an outlet portion on which said article is to be disposed for drying;

a blower means, associated with said housing, for providing a flow of air through said tubes in order to ventilate said article, the improvement comprising: pocket means,

formed in said housing for each of said plurality of tubes, having a wall portion which diverges relative to said flow of air from said blower means and a wall portion which is disposed generally transversely of said flow of air, for capturing a portion of said flow of air and for directing said portion of said flow of air into said inlet of each of said tubes, so that the effect upon air flow through one of said tubes, due to a restriction of said outlet thereof by said articles, is reduced when less than all of said outlets of said tubes are likewise restricted.

4,265,031

ROTARY DRUM MOUNTED BY MEANS OF RUNNING RINGS

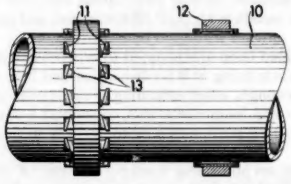
Bernhard Kirchhoff, Ennigerloh, Fed. Rep. of Germany, assignor to O&K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Nov. 15, 1979, Ser. No. 94,538

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1978, 2849490

Int. Cl.[3] **F26B** *25/02*

U.S. Cl. 34—108 **9 Claims**



1. A rotary drum for the heat treatment of bulk goods, the drum being mounted by means of thrust rings, comprising

a rotary drum having an outer shell, a thrust ring disposed around said outer shell,

wedges being mounted on the outer periphery of the shell of the rotary drum, said wedges being disposed opposite to one another at a spacing corresponding approximately to the width of said thrust ring, said wedges having inclined surfaces facing toward each other,

portions constituting insert pieces being secured to said thrust ring, said insert pieces having counterwedge surfaces cooperating with said inclined surfaces of said wedges,

said inclined surfaces and said counterwedge surfaces are disposed on the outer periphery of the shell of the rotary drum successively "flip" symmetric.

4,265,032

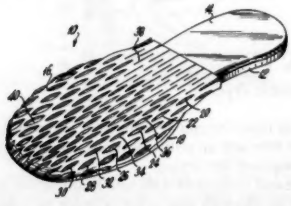
EXPANDABLE ARTICLE OF FOOTWEAR

Beth Levine, New York, N.Y., assignor to Betherb, Inc., New York, N.Y.

Filed Jun. 14, 1979, Ser. No. 48,487

Int. Cl.[3] **A43B** *3/12, 7/06*

U.S. Cl. 36—11.5 **13 Claims**



1. An expandable article of footwear comprising

a sole with an upper disposed over at least a portion of said sole,

a free edge of said upper providing an opening through which a foot enters into said article of footwear,

said upper including means for permitting a major portion of said upper to expand,

said means also permitting said free edge to expand to accommodate entry of the foot,

said means including an array of elongated slits colinearly arranged into substantially parallel columns, said slits extending through said upper and being spaced apart in the columnar direction, said slits of adjacent columns being disposed in staggered relationship with each other, and

said slits being substantially perpendicular to said free edge with a plurality of said slits extending through said free edge.

4,265,033

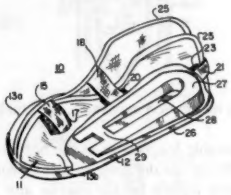
SHOE TO BE WORN OVER CAST

Sidney R. Pols, c/o E. J. Sabel & Co., Benson East Bldg.,P.O. Box 644, Jenkintown, Pa. 19046

Filed Mar. 21, 1979, Ser. No. 22,447

Int. Cl.[3] **A43B** *7/00, 7/14*

U.S. Cl. 36—110 **4 Claims**



1. A shoe to be worn over a cast which comprises

an upper which is adapted to fit around the lower portion of a cast and which has a toe and heel portion, the upper including

a pair of side halves detachably secured around the cast by a plurality of straps,

a sole having a toe and heel portion with a flat bottom surface and having said side halves joined to the sole along its outer margin,

said upper side halves meeting at the front and rear of the sole for enclosing the cast,

a continuously forwardly tapered cast supporting heel wedge within said upper and higher at the rear thereof and extending forwardly from the rear of the upper a distance of the order of two thirds of the length of the sole from the rear,

said wedge between its side margins having a central longitudinally extending cutout portion for the reception of the transversely curved bottom of the cast.

4,265,034

SKI BOOT

Georges P. J. Salomon, Annecy, France, assignor to S.A. Etablissements Francois Salomon & Fils, Annecy, France

Filed Jun. 14, 1979, Ser. No. 48,467

Claims priority, application France, Jun. 16, 1978, 78 18122; Apr. 27, 1979, 79 10811

Int. Cl.[3] **A43B** *5/04;* **B43B** *21/00*

U.S. Cl. 36—121 **19 Claims**

1. In a ski boot of the type which is put on and taken off through the rear, comprising:

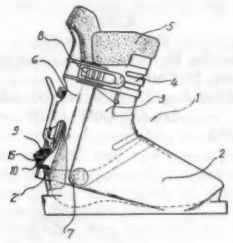
a shell continuously surrounding the zones of the foot and the front of the bottom of the leg and comprising respectively, a rigid bottom part of the shell around the foot and

a more flexible upper of the shell around the front of the bottom of the leg;

a rear closing cover or spoiler pivoted on said shell, about a lower transverse axis, approximately in the malleolar zone, said spoiler surrounding the rear of said bottom of the leg and serving as cover for closing the boot on the foot, as well as means for rearwardly supporting the leg when in a position of use,

connecting means connecting said rear closing spoiler and the monobloc upper-bottom of the shell assembly

a member for supporting the upper formed by said spoiler



and the flexible upper of the shell adapted to occupy a first active position for limiting the rearward angular movement of said upper, and a second inactive position allowing the upper freedom of angular movement,

the improvement comprising: providing that the support member is formed of a piece having a U-cross section which extends transversely and provided with two arms, an upper arm and a lower arm, said arms being adapted to slide respectively in oblong and transverse slots provided in the lower, rear part of the spoiler and the support member removably mounted on the spoiler is, in active position of use, in direct contact with the rigid bottom of the shell.

4,265,035

DRAG-HEAD FOR A SUCTION DREDGER WITH A PIVOTABLE SIGHT

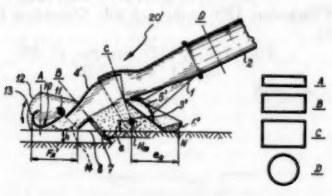
Arie Goedvolk, Krimpen A/D Ijssel, Netherlands, assignor to Koninklijke Adriaan Volker Groep B.V., Rotterdam, Netherlands

Filed Dec. 26, 1978, Ser. No. 973,033

Claims priority, application Netherlands, Dec. 27, 1977, 7714438

Int. Cl.³ E02F *3/92*

U.S. Cl. 37—58 **3 Claims**



1. A drag-head for a suction dredger comprising

a sight freely pivotable about a transversely extending axis during operation, said axis disposed proximate to the surface to be cut and located between a transversely extending blade and a heel plate,

said cutting blade protruding downwardly and forwardly from below the lower edge of said sight,

the top edge of said cutting blade forming an inlet opening with the inner wall of said sight,

said heel plate connected to said sight and located in front of said axis for supporting said drag-head, said heel plate being at substantially the same level as said axis but spaced apart therefrom and contacting the surface to be cut at a point well forward of said axis thereby inhibiting forward tilting of said sight, and

slide blocks attached to said sight spaced behind said axis and located outside of the side edges of said sight for resting upon an uncut surface thereby inhibiting rearward tilting of said sight.

4,265,036

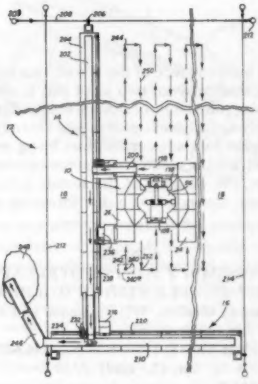
BUCKET DREDGING AND CONVEYING SYSTEM

William J. Staats, 4007 Orchard Hts. Rd., NW., Salem, Oreg. 97304

Filed Mar. 23, 1979, Ser. No. 23,157

Int. Cl.³ E02F *5/28, 7/02, 9/18, 3/44*

U.S. Cl. 37—71 **17 Claims**



1. Apparatus for removing bottom material from beneath the surface of a body of water comprising:

floatable base means;

tower means mounted on said base means for extending vertically upwardly therefrom, said tower means including guide means;

carriage means mounted on said tower means operable for substantially vertical shifting along said guide means;

rigid means including an elongate member having a bucket mounted adjacent one end thereof, the other end of said elongate member being pivotally connected to said carriage means and suspended therefrom to permit pivotal movement of said elongate member about a horizontal axis extending generally perpendicularly to the longitudinal axis of said elongate member, said elongate member also being substantially constrained from rotation about a vertical axis; and

power-driven means mounted adjacent said tower means operable for selectively shifting said carriage means in a substantially vertical direction to effect raising and lowering of said bucket.

4,265,037

DEVICE FOR ASSEMBLING TOOLS ON A WHEEL, PARTICULARLY CUTTING TOOLS ON A TRENCHING MACHINE

Pol Lamouric, B.P. 12, 78 730 Saint Arnoult, France

Filed Mar. 16, 1979, Ser. No. 21,239

Claims priority, application France, Mar. 22, 1978, 78 08311

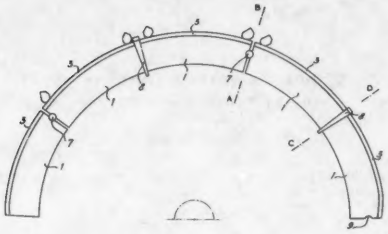
Int. Cl.³ E02F *5/08*

U.S. Cl. 37—94 **7 Claims**

1. A device for assembling tools on a wheel comprising:

sectors to which tools are fixed, each sector having the shape of a portion of a disc; and

means for fixing the sectors adjacent to each other on at least one face of a wheel in a disc formation, said fixing means comprising stops connected to the wheel and wedges positioned between adjacent sectors, said stops and wedges being disposed alternatively around the periphery



of the at least one face of the wheel, two adjacent sectors being located between two stops and in abutment therewith under the action of one of the wedges radially inserted between adjacent ends of said two adjacent sectors, each of said two adjacent sectors being provided at its other end with a notch for accommodating one of said two stops, the wedging of the sectors between the stops maintaining the sectors in a disc formation on the wheel.

4,265,038

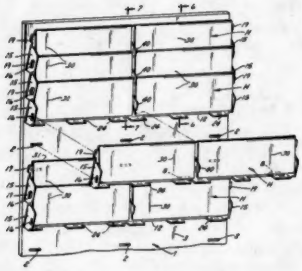
DISPLAY ASSEMBLY HAVING OVERLAPPING AND REMOVABLE SAMPLE HOLDERS

Louis J. Crosslen, Grafton, Wis., assignor to Frank Mayer & Associates, Inc., Grafton, Wis.

Filed May 5, 1980, Ser. No. 146,647

Int. Cl.³ G09F *1/10*

U.S. Cl. 40—124.2 **3 Claims**



1. A display assembly for storage of a variety of samples such as paint chips or the like for visual observation and easy removal of said samples for inspection, said assembly comprising,

a generally vertical support panel having a plurality of horizontal rows of mounting slots therethrough, said rows being vertically spaced apart, said panel having a front mounting surface,

a plurality of elongated paint chip holders mounted in overlapping relationship to one another on and horizontally across said panel on the said front mounting surface thereof,

each of said elongated holders having, a back wall and a front wall having an upper edge formed integrally with an upper edge of said back wall and generally coextensive in length with said back wall, said front wall extending downwardly and outwardly in respect to said back wall and terminating in a lower, free edge; said front wall being resilient whereby its free edge is biased to a forward position and can be pushed rearwardly to accommodate samples thereagainst when said samples are inserted between adjacent overlapping holders,

said holders having hooks for insertion in said mounting slots of said panel and for removably supporting said holders on said panel, and

interengaging means between said holders for detachably connecting them together and means extending between said holders to provide shelf means for said samples.

4,265,039

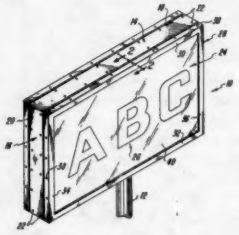
DISPLAY SIGNS

Jackson R. Brooks, Ft. Collins, Colo., assignor to ABC Extrusion Company, Ft. Collins, Colo.

Filed Aug. 23, 1979, Ser. No. 69,222

Int. Cl.³ G09F *17/00*

U.S. Cl. 40—603 **82 Claims**



1. A display sign comprising:

a sign framework having spaced upper and lower elongated support elements joined between corresponding opposite ends thereof by respective spaced elongated side support elements;

a stretchable fabric display face disposed across the space defined by said framework;

a hinge affixed to at least one of said support elements;

a hinge pin mated within said hinge to rotate therein;

means for limiting said hinge pin in extent of rotation within said hinge pin;

and means for coupling to said hinge pin one marginal portion of said fabric.

4,265,040

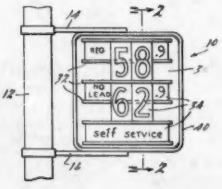
TWO-SIDED DISPLAY DEVICES

Robert Sarkisian, 4276 Stoneleigh Rd., Bloomfield Hills, Mich. 48013

Filed Feb. 8, 1979, Ser. No. 10,309

Int. Cl.³ G09F *7/02*

U.S. Cl. 40—618 **11 Claims**



1. A display holder for displaying sign panels, said sign panels being held securely in place without permanent defor-

mation and adapted for repeated use and reuse in said display holder, said display holder comprising

a substantially flat backing member comprising a single sheet of material with two sides,

at least one track member positioned on and secured to each side of said backing member,

each of said track members having a pair of flanges thereon forming elongated channels between each of said flanges and a side of said backing member, each of said channels having an inner end and an outer open end, said sign panels being receivable into selected of said channels through said open end thereof,

first rib means on each of said flanges adjacent the open ends of said channels and extending inwardly into said channels, and

second rib means on each side of said backing member adjacent each of said channels, each of said second rib means comprising a plurality of projections extending inwardly into said channels and positioned in each of said channels between said first rib means and the channel inner end,

said first and second rib means extending inwardly into each of said channels such that said sign panels positioned in said channels and abutting against the respective rib means associated therewith are held tightly in tension in said channels without permanently deforming said sign panels,

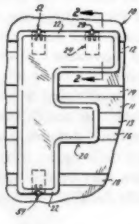
said first and second rib means automatically biasing the portion of the sign panels outwardly of each of said channels in a direction toward the plane of and into engagement with each side of said backing member.

4,265,041

INDICIA-SUPPORTING CLIP

Lindell N. Edwards, St. Louis, Mo., assignor to Commander Board International, Inc., St. Louis, Mo.

Filed Apr. 25, 1980, Ser. No. 143,749
Int. Cl.³ G09F 7/20
U.S. Cl. 40—620 **17 Claims**



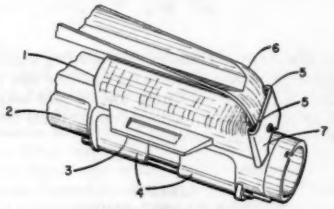
1. A clip which can grip indicia and which can engage a signboard to dispose said indicia a short distance forwardly of said signboard and which comprises an elongated member of resilient material that has a board-engaging portion adjacent one end thereof, a plurality of fingers at the other end thereof, and an intermediate spacing portion, said clip being adapted to be disposed adjacent the rear of said indicia, one of said fingers having a portion thereof which is adapted to extend from a position adjacent the rear of said indicia past the adjacent edge of said indicia to a position adjacent the front of said indicia where it can overlie and engage a portion of said front of said indicia, another of said fingers being adapted to engage the rear of said indicia adjacent said edge of said indicia, said fingers acting, in their un-stressed state, to resist movement of said edge of said indicia into a position wherein said other finger can engage said rear of said indicia adjacent said edge of said indicia while said portion of said one finger overlies and engages said portion of said front of said indicia, said clip yielding in response to the application of stress thereto to permit relative movement between said one and said other fingers which will allow said edge of said indicia to move into said position wherein said other finger can engage said rear of said indicia adjacent said edge of said indicia while said portion of said one finger overlies and engages said portion of said front of said indicia, the relative movement of said one and said other fingers in response to said stress developing restorative forces within said clip which will cause said one and said other fingers to be urged into intimate gripping engagement with said rear of said indicia adjacent said edge of said indicia and into intimate gripping engagement with said portion of said front of said indicia.

4,265,042

CARTRIDGE RETRIEVER MOUNTING AND ATTACHING DEVICE FOR A COLT M-16 RIFLE

Raymond O. Isola, 1071 Killmaster Dr., Oscoda, Mich. 48750

Filed Feb. 4, 1980, Ser. No. 118,113
Int. Cl.³ F41C 27/00
U.S. Cl. 42—1 T **1 Claim**



1. A mounting and attaching device for mounting and attaching a cartridge retriever to an M-16 Colt rifle which comprises in combination a channel member and a wedge-shaped locking device which channel member is a rigid channel member adapted to be mounted channel down on the upper surface of the receiver section of an M-16 rifle, said channel member having a lug with a centrally located aperture, positioned such that the lug is situated on the lowest front edge and parallel to the channel member and extending perpendicular thereto; said channel member having at its forward end, two right angle, vertical tabs which receive the wedge-shaped locking device, which wedge-shaped locking device has a lower edge longer than the top edge and a centrally located threaded set-screw in its face for securing the wedge-shaped locking device to the Colt M-16 rifle, said wedge-shaped device having its side edges turned back upon themselves such that the side edges form a lip which is the same width as the vertical tabs on the channel member whereby the wedge-shaped locking device side edges align with and set down over the right angle vertical tabs to help secure the channel member to the Colt M-16 rifle.

4,265,043

EXTRACTOR ARRANGEMENT FOR FIREARMS

Kenneth C. Rowlands, 612 Pauline Ave., Utica, N.Y. 13502

Continuation-in-part of Ser. No. 28,503, Apr. 9, 1979, abandoned. This application Aug. 30, 1979, Ser. No. 71,279
Int. Cl.³ F41C 15/12
U.S. Cl. 42—25 **17 Claims**

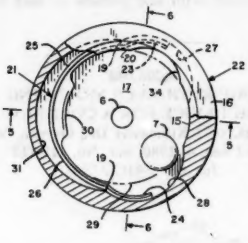
1. In a firearm of the type which includes a breech-bolt having a face formed with an annular shroud having an interior circumferential wall defining a recess for receiving the base of a cartridge, and a resilient extractor ring segment received in said recess and formed with a claw in a central portion thereof for engaging the cartridge base, an improved extractor arrangement comprising:

said extractor ring segment having free end portions at opposite ends of the arc length thereof bent outwardly to form detent arms;

said interior wall being formed with an arcuate clearance cut, and having a pair of projections circumferentially spaced thereabout, said clearance cut extending said re-

cess outwardly into said shroud and defining a lip lying between said clearance cut and said bolt face;

said detent arms normally engaging said projections to position said central portion of said ring segment in circumferential alignment with said clearance cut and in spaced-



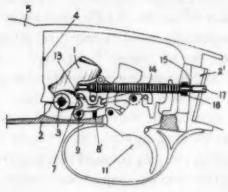
apart relation to said interior wall, said ring segment being displaceable to admit a cartridge base into said recess by deflecting radially outwardly toward said interior wall with an accompanying sliding motion of said detent arms with respect to said projections.

4,265,044

DOUBLE-BARREL SHOTGUN

Pier C. Beretta, Gardone, Italy, assignor to Fabbrica D'Armi Pietro Beretta S.p.A., Gardone, Italy

Filed Jan. 10, 1979, Ser. No. 2,710
Int. Cl.³ F41C *7/00*
U.S. Cl. 42—41 **10 Claims**



1. A double-barrel shotgun comprising a pair of hammers pivoted on a first common pin; a pair of strikers respectively associated with said pair of hammers; a pair of trip levers each having a first portion facing upwardly and including a frontwardly directed projection for arming and releasing said hammers, said trip levers being pivoted on a second common pin; a trigger element for separately controlling the trip levers; a pair of axially elongated trip springs acting on said hammers for displacement thereof toward their respective strikers; and a tripping mechanism including first and second trip teeth formed in the rearwardly facing surface of each of said hammers, said teeth being alternately engaged by said projection on said trip levers.

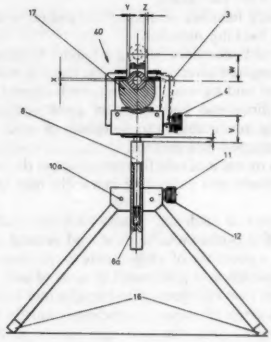
4,265,045

RIFLE AND WEAPON REST

Louis K. Garbini, Schöntal, CH-9304 Bernhardzell, Switzerland

Filed Jan. 2, 1979, Ser. No. 526
Claims priority, application Switzerland, Jan. 11, 1978, 257/78; Oct. 20, 1978, 10855/78
Int. Cl.³ F41C *29/00*
U.S. Cl. 42—94 **13 Claims**

1. Rifle and weapon rest, for use with a rifle for support of said rifle during the process of aiming, which comprises: a pressure rod (**7**) and spring (**8***a*), a rifle holder (**40, 50, 51, 52**), adapted for partial radial rotation; a spring support, and a guide tube (**8**) for guiding said rifle holder symmetrically in axial and vertical directions, said guide tube (**8**) being axially and verti-



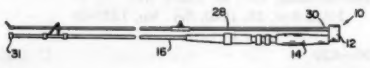
cally adjustable continuously; and a holding body having struts (**13, 14, 24**) which takes supports on the ground.

4,265,046

ROD HOLDER DEVICE

W. Louis Keith, 609 SE. 52nd Ave., Ocala, Fla. 32670

Filed Aug. 2, 1979, Ser. No. 63,998
Int. Cl.³ A01K *87/00*
U.S. Cl. 43—21.2 **8 Claims**



1. A rod holder device for use in combination with a plural section fishing rod for holding one of the rod sections, said device comprising: receiver head means pivotally attached to the rod handle and moveable between first and second positions; and receiver means formed in said receiver head means, said receiver means comprising at least one aperature dimensioned and configured to retain one end of a rod section therein, said first position defining a closed configuration and said second position defining an opened position, whereby at least one rod section may be releasably held in said receiver means in substantially parallel relation to the main body of the fishing rod.

4,265,047

VEHICLE INSTRUMENTATION AND CONTROL APPARATUS

Burton C. Meyer, Downers Grove; Howard J. Morrison, Deerfield, and Gunars Licitis, Jr., Lombard, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 9, 1979, Ser. No. 10,808
Int. Cl.³ A63H *33/26*
U.S. Cl. 46—232 **10 Claims**

1. A toy vehicle instrumentation and control apparatus comprising:

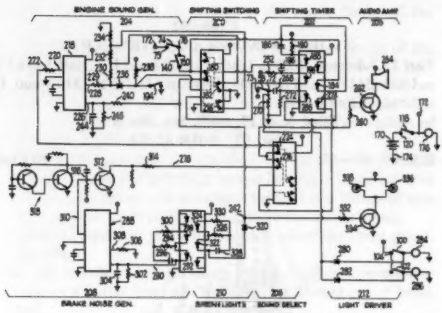
a toy vehicle instrumentation panel and control housing;

operator actuated control means attached to said housing and being positionable to various operating positions;

means adjacent said operator control means for sensing the operative positions of said operator actuator control means; and

means responsive to said operative position sensing means for automatically generating at least two increasing frequency sound effects one after the other, each for a predetermined time duration corresponding to engine operation

in at least two respective forward drive modes in response to predetermined states of said sensing means corresponding to predetermined operative positions of said operator actuated control means.

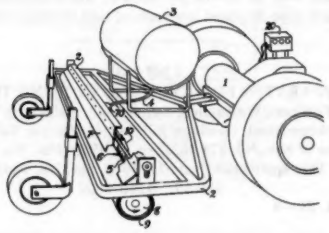


4,265,048

AUTOMATIC MOISTURE CONTROL FOR ROLLER APPLICATOR

James S. Schepers, Lincoln, Nebr., and Cary A. Gloor, Carrollton, Tex., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 3, 1979, Ser. No. 99,813
Int. Cl.³ B05C *1/00*
U.S. Cl. 47—1.5 **8 Claims**



1. In a moisture control system for use with a contact roller-type, fluid applicator for treating plants, wherein said applicator comprises a roller having a fluid absorbent surface for contacting said plants and a wetting device for delivering said fluid to said roller surface, the apparatus comprising:

a. a sensor comprising at least two electrodes spaced apart along the length of said roller and adapted to conform to at least a portion of said roller surface circumference;

b. means for yieldingly biasing the electrodes of said sensor against said roller surface;

c. an electric current source coupled to said sensor whereby the flow of electric current across said electrodes varies with the resistance in said roller surface as a function of its moisture content; and

d. controlling means provided with a timing function for wetting said surface and a timing function for moisture equilibrium on said surface, wherein said controlling means is responsive to said electric current flow across said electrodes for automatically controlling a valve upstream of said wetting device.

4,265,049

TEMPORARY PLANT COVERS

Lynda Gorewitz, 9107 Shad La., Potomac, Md. 20854

Filed Oct. 3, 1978, Ser. No. 948,137
Int. Cl.³ A01G *13/00*
U.S. Cl. 47—26 **2 Claims**

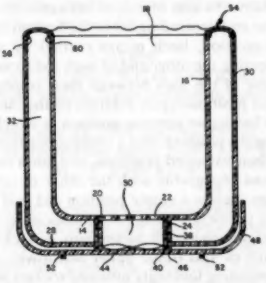
1. A plant cover adapted to substantially enclose a plant in a container, said plant cover formed of a substantially waterproof and light transmitting flexible sheet with upper and lower edges and having a first tie means, second tie means and trough means, said first tie means comprising a first channel and draw string within said first channel and being located along said upper edge of said flexible sheet, said second tie means being located between said lower edge of said flexible sheet and said trough means and comprising a second channel and a draw string within said second channel, said trough means being integrally formed with said second channel of said second tie means, said upper and said lower edges of said flexible sheet being formed of upper and lower folded portions of said sheet and said lower folded portion being sealed to said sheet to form said second channel wherein said lower folded portion is sealed between said lower edge and the distal edge of said lower folded portion and the trough means is formed above said seal and the distance from the seal to the distal edge of said lower folded portion is greater than the distance from the seal to said lower edge.

4,265,050

FLOWER POT WITH CONTROLLED MOISTURE

Theodore H. Buescher, 1709 E. Third Pkwy., Washington, Mo. 63090

Filed Oct. 1, 1979, Ser. No. 80,436
Int. Cl.³ A01G *25/00*
U.S. Cl. 47—79 **16 Claims**



1. A flower pot device for use in providing for the controlled emission of moisture about the foliage of a flower or other plant contained therein while at the same time providing for the drainage and collection of any excess fluid from within the plant medium, said device comprising an inner container member adapted for holding potting soil and a plant, means associated with said inner member for draining the excess fluid there-

from, container means disposed exteriorly about said inner container member adaptable to hold a liquid therein, a basin member positioned adjacent to and engageable with said container means adaptable to catch and hold a liquid therein, discharge means communicating said inner container member with said basin member for drainage of the excess fluid therefrom, and a member cooperatively engageable with said container means for controlling the amount of moisture emitted about the periphery of a flower or other plant contained therein.

4,265,051

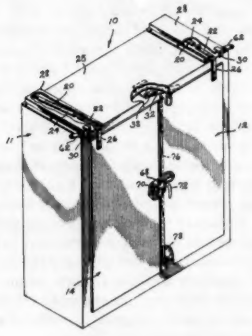
DOOR HAVING IMPROVED CLOSING AND LATCHING SYSTEMS

Clarence E. Williams, 2122 W. 450 N, LaPorte, Ind. 46350

Division of Ser. No. 868,905, Jan. 12, 1978, Pat. No. 4,146,994, which is a continuation-in-part of Ser. No. 757,979, Jan. 10, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 14,499

Int. Cl.[3] **E05C** *9/00, 7/04*

U.S. Cl. 49—7 **10 Claims**



1. A door construction comprising a frame having upper and lower and spaced side parts, a pair of doors supported by said frame, one of said doors connected adjacent one side edge to said frame, first and second generally vertically oriented rods carried by said one door adjacent the other side edge of the door, guide means for said rods wherein said first rod is shiftable generally axially relative to said one door between an extended position with one end protruding from the top of the door and a retracted position and wherein said second rod is shiftable relative to said one door between an extended position with one end protruding from the bottom of the door and a retracted position, latch means carried by said one door, means connecting the other end of each rod to said latch means for movement of the rods between their respective extended and retracted positions upon rotation of the latch means, said latch means having an opening position in which said rods are in their retracted positions and a locking position in which said rods are in their extended positions, said latch means including retainer means engageable with the other of said doors when said doors are each in a closed position and said latch means is in its locking position, biasing means associated with said latch means for urging the latch means into its locking position, a socket in each of said frame upper and lower parts, said rod one ends protruding lockingly into said sockets when said latch means is in its locking position, catch means carried by said one door for engaging one of said rods when said latch means is rotated into its opening position to releasably secure the latch means in its opening position and the rods in their retracted positions, said frame including trip means for contacting said one rod and disengaging said one rod from said catch means when said one door is closed with said latch means in its opening position whereby said biasing means will urge the latch means into its locking position and cause said rod one ends to enter said frame sockets and said retainer means to engage said other door in its closed position.

4,265,052

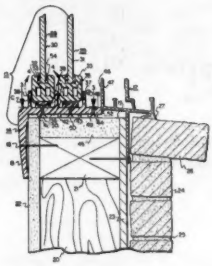
STORM WINDOW CONSTRUCTION

Earl L. Johnson, 2827 E. Little Cottonwood Rd., Salt Lake City, Utah 84170, and Dell R. Beynon, Jr., #15 Altawood Dr., Sandy, Utah 84070

Filed Aug. 17, 1979, Ser. No. 67,543

Int. Cl.[3] **E05B** *65/04*

U.S. Cl. 49—63 **10 Claims**



1. An interior storm window construction including, in combination, a four-sided frame each side of which has a generally L-shaped transverse cross-section and is provided with a plurality of inwardly directed channel-forming ribs defining window-receiving channels and outwardly directed support ribs, said frame being provided with respective sets of fluid-admitting apertures between successive pairs of said support ribs, windows disposed in said channels, said frame being provided with an on-the-job-site-cut, installed-window-frame abutment edge disposed inwardly of said channel-forming ribs.

4,265,053

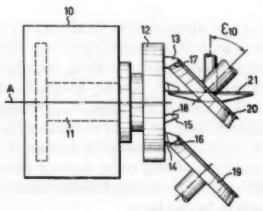
APPARATUS FOR GRINDING CUTTING TOOLS

Erich Kotthuas, Wallisellen, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Division of Ser. No. 874,463, Feb. 2, 1978, Pat. No. 4,183,182. This application Nov. 27, 1978, Ser. No. 964,084

Int. Cl.[3] **B24B** *3/02*

U.S. Cl. 51—3 **1 Claim**



1. A grinding machine for grinding cutters detachably secured to a cutter head of a gear cutting machine, each cutter having an inner flank, an outer flank and a cutting face and the cutter head possessing sets of cutters of three respective cutter groups encompassing inner cutters, located along a first circle having a first radius, outer cutters located along a second circle having a second radius and auxiliary cutters located on a third circle having a third radius, comprising:

a shaft fixed on said cutter head, a shaft bearing fixed on said

grinding machine supporting said shaft with said cutter head;

a disk member;

a first grinding means for grinding the outer flanks of the cutters;

a second grinding means for grinding the inner flanks of the cutters, each of said first and second grinding means having a grinding disk rotatable about an axis arranged at an angle relative to said disk and the projection of those axes on said disk member are normal to a common radius of said disk member;

a third grinding means for grinding the cutting faces of the cutters, said third grinding means having a grinding disk rotatable about an axis arranged parallel to a radius of said disk member intersecting the axis of the cutter head;

a separate respective drive means for each of the three grinding disks;

said disk member having a recess which renders it possible to remove a cutter head and to mount a different cutter head; and

said grinding means with their respective driving means being attached to said disk member and said cutter shafts upon a support in the direction of the shafts towards said disk member in order to selectively bring into engagement at least one of said grinding disks with said cutters located at said cutter head.

4,265,054

INTERNAL GRINDING MACHINE

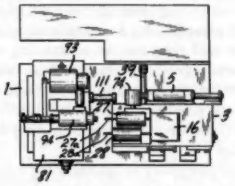
Shohei Ito, Tokyo, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 613,876, Sep. 16, 1975, abandoned. This application Jan. 16, 1978, Ser. No. 869,428

Claims priority, application Japan, Sep. 17, 1974, 49-107463; Oct. 4, 1974, 49-114405

Int. Cl.³ B24B *5/06*

U.S. Cl. 51—5 D **6 Claims**



1. An internal grinding machine comprising: a base; a first wheel carrier table slidably mounted on said base and slidable along a first axis; a second wheel carrier table mounted on said first wheel carrier table and being mounted for slidable movement along a second axis and having a plurality of grinding wheel spindles mounted thereon; a shift infeed table slidably mounted on said base and slidable along a third axis disposed at an angle with respect to said first axis and supporting thereon a work spindle head for holding a workpiece; means for selectively advancing said shift infeed table along said third axis so as to selectively position the workpiece held on said work spindle head adjacent and facing respective ones of said grinding wheel spindles; an infeeding mechanism mounted on said base operable after said shift infeed table has positioned the workpiece adjacent and facing a first one of said grinding wheel spindles to effect infeeding movement of said shift infeed table to thereby effect infeeding of the workpiece held on said work spindle head along said third axis relative to said first one of said grinding wheel spindles whereby a first grinding operation can be performed on the workpiece; and another infeeding mechanism mounted on said base operable after said shift infeed table has positioned the workpiece adjacent and facing a second one of said grinding wheel spindles to effect infeeding movement of said first wheel carrier table along said first axis to thereby effect infeeding of said second one of said grinding wheel spindles relative to the workpiece held on said work spindle head whereby a second grinding operation can be performed on the workpiece.

4,265,055

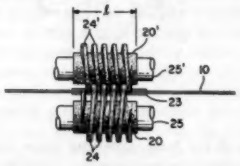
METHOD AND APPARATUS FOR FORMING A RAZOR BLADE EDGE

Cyril A. Cartwright, Monroe, and Anthony J. Peleckis, Jr., Trumbull, both of Conn., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 857,726, Dec. 5, 1977, abandoned, which is a continuation of Ser. No. 633,751, Nov. 20, 1975, abandoned. This application Sep. 8, 1978, Ser. No. 940,693

Int. Cl.³ B24B *1/00, 3/48*

U.S. Cl. 51—80 B **10 Claims**



1. Apparatus for sharpening a razor blade comprising:

means for drawing a razor blade strip along a defined path at a controlled linear velocity;

grinding means disposed in the path of the strip for forming a grind facet on an edge thereof;

first honing means located on the path remote of the grinding means for forming a first hone facet on the strip; and

two final resilient substantially cylindrical honing wheels located adjacent the strip each mounted on opposing sides of the strip having their axes parallel thereto and helical circumferential axially advancing grooves formed therein to permit the wheels to intermesh creating a nip of predetermined axial length and included angle parallel to the strip and contiguous therewith, the Young's Modulus value of said honing wheels being less than about 3×10^6 pounds per square inch, means for rotating the wheels in opposing directions into the edge of the strip and then away from the strip adjacent a remaining portion thereof and abrading the strip so that the final hone facet thereby formed is of substantially convex geometry and the blade edge is free from periodic lateral deformation.

4,265,056

ELECTRIC CAN-OPENER WITH KNIFE SHARPENER

Osamu Yamamoto, Nagoya, Japan, assignor to Kabushikikaisha, Japan

Filed May 17, 1979, Ser. No. 39,928

Claims priority, application Japan, May 17, 1978, 53-58457

Int. Cl.³ B24B *45/00*

U.S. Cl. 51—128 **4 Claims**

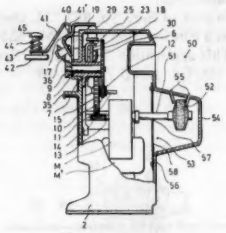
1. In a can opener including an electric motor and a spindle coupled for rotation to said motor and carrying a knife grinding wheel, the improvement which comprises, in combination:

(i) said spindle has a portion, extending from a free end thereof, which has a cylindrical outer periphery,

(ii) said grinding wheel has an axial hole the internal periphery of which is cylindrical and of greater diameter than the outer periphery of the spindle,

(iii) a one-piece bush composed wholly of resiliently deformable material is disposed in and extends at each end from the axial hole of the grinding wheel, and is engaged upon said spindle portion, said bush including a sleeve having its external periphery cylindrical and of a diameter, in the unconstrained state of the bush, less than the diameter of

the internal periphery of the grinding wheel hole, said sleeve having its internal periphery cylindrical and of a diameter, in the unconstrained state of the bush, less than the diameter of the outer periphery of the spindle, said bush having at a first end thereof a radially-outwardly projecting flange of external diameter greater than the diameter of the internal periphery of the grinding wheel hole, said bush having at a second end thereof a rib which, in the unconstrained state of the bush, is radially-inwardly projecting and of a diameter less than that of the internal



periphery of the bush, whereby upon insertion of said bush in its unconstrained state into the hole of the grinding wheel with the flange at one side of the grinding wheel, and thereafter forcing said bush onto said spindle, said rib abuts against the spindle and is expanded with resilient deformation to become a radially-outwardly directed rib at the other side of the grinding wheel, the dimensions of said inwardly projecting rib being made such that after deformation said radially-outwardly rib is of diameter greater than the diameter of the internal periphery of the grinding wheel hole.

4,265,057

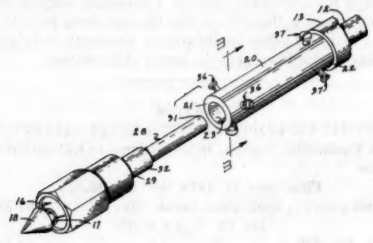
COLLET CHUCK ALIGNING ASSEMBLY FOR GEM FACETING MACHINES

Douglas L. Hoffman, Box 246-A, Clayton, Wash. 99110

Filed Apr. 7, 1980, Ser. No. 138,133

Int. Cl.³ B24B 9/16

U.S. Cl. 51—229 **10 Claims**



1. Apparatus for coaxially aligning a chuck on the dop arm of a gem faceting machine, comprising:

an elongated plug having a forward plug end adapted to mount the collet chuck along a central chuck axis and a longitudinally spaced rearward plug end;

a socket having an open longitudinal bore leading rearwardly along a bore axis from an open socket end to a closed socket end, said socket being adapted to mount to a dop arm along a dop arm axis;

said socket slidably receiving the elongated plug along the length of said bore;

a first set of three screws threadably mounted through the socket, said screws being equiangularly spaced about the bore axis and being radially extendable into the longitudinal bore;

said first set of three screws being situated across a single plane perpendicular to the bore axis and situated adjacent the open socket end;

a second set of three screws threadably mounted through the socket, said screws being equiangularly spaced about the bore axis and being radially extendable into the longitudinal bore;

said second set of three screws being situated across a single plane perpendicular to the bore axis and is situated adjacent the closed socket end.

4,265,058

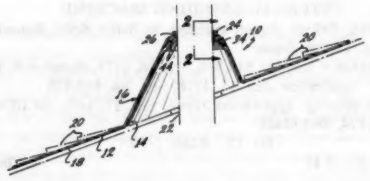
ROOF FLASHING STRUCTURES

Duane D. Logsdon, Fullerton, Calif., assignor to The Logsdon Foundation, Stanton, Calif.

Continuation-in-part of Ser. No. 883,420, Mar. 6, 1978, Pat. No. 4,160,347. This application May 24, 1979, Ser. No. 42,216

Int. Cl.³ E04D 1/36

U.S. Cl. 52—58 **9 Claims**



1. A roof flashing structure used to form a seal between a roof and a pipe extending through the roof, of the type wherein a generally flat plate having a centralized opening of a larger dimension than said pipe and an upstanding tapered housing having an internal dimension larger than said pipe are integrally formed of a rigid material such that said housing extends upward from said plate and said centralized hole in said plate forms the lowermost opening in said housing the improvement which comprises:

the uppermost periphery of said housing containing a generally upward opening annular channel means dividing said uppermost periphery into an inner annular support means and an outer annular support means;

a resilient elastomeric annular sealing means having a generally upstanding annular wall and an annular skirt means projecting downward from said annular wall, said upstanding annular wall having a plurality of sealing flanges extending circularly around said wall and projecting radially toward the center of said sealing means, said flanges each being independently capable of engaging with and forming a seal with said pipe;

said annular skirt means fitting into said annular channel means so as to position said annular skirt means between said inner annular support means and said outer annular support means;

said annular skirt means being thermally bonded to at least said inner annular support means locking said annular sealing means in said annular channel means and maintaining said annular sealing means fixedly held in said uppermost periphery of said housing;

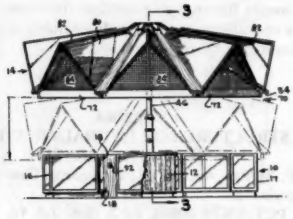
said annular skirt means and at least said inner annular support means being formed from thermally compatible material such that when contacted in a heated state said thermal bond is formed upon cooling.

4,265,059

KIOSK

David J. Johnson, Muskegon, Mich., assignor to Studio One Services, Inc., Muskegon, Mich.

Filed Dec. 15, 1978, Ser. No. 969,922
Int. Cl.³ E04B 1/346
U.S. Cl. 52—66 **6 Claims**



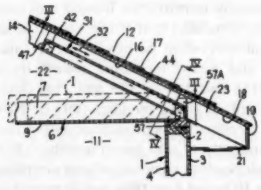
1. A kiosk comprising:
a central housing having a hollow interior;
a vertically extending movable support tube having a lower end mounted and supported in said central housing;
an umbrella-like cover mounted on the upper end of said movable support tube;
counter means spaced from and encircling said central housing to define a space therebetween and having an outer periphery in vertical alignment with the outer periphery of said umbrella-like cover;
motor driven power drive means mounted in said said central housing for moving said support tube between a lower position in which the umbrella-like cover is adjacent the upper extent of said counter means so as to result in secure enclosure of the space within the confines of said counter means and an upper position in which the umbrella-like cover is at a sufficient elevation above the counter to permit unimpeded human occupancy of the space between the counter means and the central base means; and
wherein said umbrella like cover includes:
a cap plate assembly attached to the upper end of said support tube;
a base ring frame positioned in a horizontal plane concentric with respect to the vertical axis of the support tube at an elevation below the cap plate assembly; and
a plurality of radial ribs equidistantly positioned about the support tube with each radial rib having an upper end connected to the cap plate assembly and a lower end extremity connected to the base ring frame with said radial ribs being held in compression by the static interaction of the radial ribs with the top plate assembly and the base ring frame.

4,265,060

VENTILATION BAFFLE

Edward J. Woodhams, 134 Crooked Lake Dr., Kalamazoo, Mich. 49009

Filed Jul. 6, 1979, Ser. No. 55,338
Int. Cl.³ E04B 7/02; F24F 7/00
U.S. Cl. 52—92 **2 Claims**



1. An insulation stop and ventilation baffle for minimizing ice accumulation on the eaves of a ceiling-insulated building wherein the building comprises upstanding walls having a horizontal top plate, horizontal ceiling joists having a ceiling affixed to the undersides thereof, roof rafters inclined upwardly from said ceiling joists and having roof sheathing affixed to the tops of said roof rafters, the space between said ceiling and said roof sheathing defining an attic, said ceiling joists and said roof rafters extending to said top plate and being affixed thereto, said roof rafters extending outwardly beyond said top plate to form eaves so that the attic and the eaves communicate by means of openings defined between adjacent roof rafters, said baffle comprising an elongated generally rectangular retainer member of stiff material, said retainer member having a pair of longitudially extending, parallel, fold lines respectively located close to the opposite lateral edges of said retainer member to divide said retainer member into a rectangular central portion and a pair of rectangular lateral edge portions on opposite sides of said central portion so that said lateral edge portions of said retainer member can be bent upwardly relative to said central portion to form upstanding sides positionable adjacent the opposing surfaces of a pair of adjacent roof rafters and extending substantially into contact with the lower surface of said roof sheathing whereby to position said central portion substantially parallel with and spaced a fixed distance downwardly from the lower surface of said roof sheathing thereby to define an air-flow passageway which is open at both its ends, said retainer member having an outer transversely extending fold line located close to the outer longitudinal end of said retainer member and defining an outer rectangular end portion so that said outer end portion can be positioned at the juncture of said roof rafters and ceiling joists above said top plate and can be bent downwardly relative to said central portion to define an outer downwardly extending end wall between the opposing surfaces of a pair of adjacent roof rafters and extending downwardly from said central portion substantially into contact with said top plate, a pair of rectangular outer tabs formed at the outer ends of said lateral edge portions of said retainer member adjacent said outer rectangular end portion, each of said outer tabs being defined by an outer transversely extending cut line spaced longitudinally inwardly from said outer transversely extending fold line and extending between the adjacent longitudinal edge of said retainer member and the adjacent longitudinally extending fold line, a longitudinally extending cut line extending longitudinally from the inner end of said outer transversely extending cut line to said outer transversely extending fold line and an outer tab fold line extending longitudinally from said outer transversely extending fold line to the adjacent outer end edge of said retainer member, said longitudinally extending cut line and said outer tab fold line being longitudinally aligned with and constituting extensions of said longitudinally extending fold line for said lateral edge portion so that said tabs can be bent into upright positions wherein they extend between said top plate and the lower surface of said sheathing and substantially parallel with said lateral edge portions.

4,265,061

BUILDING SYSTEM

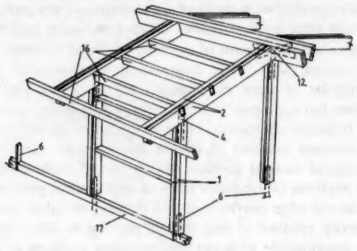
Barry A. Sweet, Durham Dr., Havelock North, and John W. Linnell, 813 A Caroline Rd., Hastings, both of New Zealand

Filed Dec. 27, 1978, Ser. No. 973,610
Claims priority, application New Zealand, Jan. 10, 1978, 186187
Int. Cl.³ E04B 7/02
U.S. Cl. 52—93 **19 Claims**

1. A timber framed building which is prefabricated or fabricated in part prior to assembly, said building forming a post and beam structure on a foundation and being completed with diaphragm sheathing on the outside of the frame, wherein wall posts, rafters and ridge beam(s) of the frame and floor beams if the building is of more than one storey and ridge to floor

intermediate posts, if any, each comprise a pair of timber plates in parallel spaced relationship which are connected

(i) foundation to wall posts
(ii) wall posts to floor beams, if any
(iii) wall posts to rafters
(iv) rafters to ridge beam(s)
(v) ridge beam to post, if any



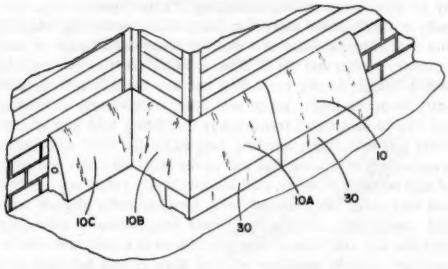
(vi) tie rafters and/or wall posts, if any, by metal splicing members secured between and to said spaced timber plates, and wherein said sheathing comprises a cladding of both exterior walls and roof with a waterproof, insect resistant, structural diaphragm formed from sheet material, a strong back member between said wall posts which runs substantially horizontally across the back of said cladding and is secured to said wall posts and is fixed along its length to the diaphragm sheet.

4,265,062

FOUNDATION COVERING

Virgil L. Klibofske, 1018-15th Ave. N., South St. Paul, Minn. 55075

Filed Feb. 2, 1979, Ser. No. 8,878
Int. Cl.³ E04B *1/80*
U.S. Cl. 52—97 **3 Claims**



1. An above-ground foundation covering to provide a continuous insulating layer around the perimeter of a building foundation area comprising:

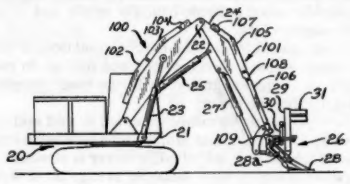
a free-standing insulating block, said free-standing insulating block having a cross section that is generally in the form of a right triangle, said free-standing insulating block having a base for supporting said free-standing insulating block in an upright position along a foundation area, said free-standing insulating block having a top section with a radiused edge, a front surface on said free-standing insulating block connecting said top section to said base to provide a surface for directing rain or snow away from the foundation area, said free-standing insulating block having a back side for placing against a foundation area, said free-standing insulating block having means on said base to permit positioning said free-standing insulating block upright by a foundation wall, said free-standing insulating block having a pair of ends with each of the ends having means for engaging another free-standing insulating block to thereby permit the end of a first free-standing insulating block to be assembled to the end of a second free-standing insulating block to thereby enable the assembled free-standing insulating blocks to form a continuous insulated region around the above-ground foundation of a building without attachment to the foundation area, said free-standing insulating block made from an insulating material to thereby retard loss of heat from the foundation wall, said means for engaging another free-standing insulating block operable to permit the disassembly of said free-stading insulating block for storage.

4,265,063

GUARD STRUCTURE FOR HYDRAULIC CONDUITS OF A MOBILE APPARATUS

Thomas P. Muller, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00501, § 371 Date Jul. 16, 1979, § 102(e) Date Jul. 16, 1979.
This PCT application filed Jul. 16, 1979, Ser. No. 98,146
Int. Cl.³ B66C *23/06*
U.S. Cl. 52—115 **18 Claims**



1. In a mobile apparatus (**20**) having a hydraulically operated, pivotally mounted beam means (**22** or **24**) a free end of which supports a hydraulically operated mechanism (**26**) for handling heavy loads, and a plurality of rigid hydraulic conduits (**42***a* or *b* and **45***a* or *b* **50***a* or *b*) mounted in a single plane on said beam means (**22** or **24**) there being couplings (such as **43***a* and *b*, and **50***c* and *e*) connecting certain of said conduits, a conduit guard structure (**100** or **101**) and guard mounting means (**51** or **52** with **110** etc. or with **125–131**, or **110** etc. or **132** etc.), comprising in combination:

a rigid guard member (**103** or **105***a* and *b*) which has a top and side plates constructed and arranged to span the plurality of conduits (**42***a* or *b* and **45***a* and *b* to **50***a* or *b*) nearly from end to end;

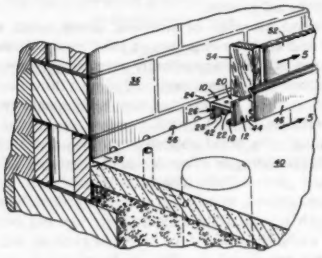
a rigid, short coupling guard member (**104** or **107***a* and *b* or **108***a* and *b*) immediately adjacent one end of said rigid guard member, said coupling guard member having a top and side plates constructed and arranged to span the couplings between conduits;

and guard mounting means (**51** or **52** with **110** etc. and **51** or **52** with **125–131**, or **110** etc. or **132** etc.) mounting each end of said guard member (**103** or **105***a* and *b*) and each of said coupling guard member (**104** or **107***a* and *b* or **108***a* and *b*) on the beam (**22** or **24**) so that said ends are free for directionally unrestricted limited movement in a plane of movement parallel to the single plane of said conduits, and for axial movement perpendicular to said plane of movement, said guard mounting means including mounting bolts (**125** and **145** or **125** and **118**) detachably securing said coupling guard member (**104** or **107***a* and *b* or **108***a* and *b*) to other parts of said mounting means for removal independently of said guard member (**103** or **105***a* and *b*), said independent removal of said coupling guard member (**104** or **107***a* and *b* or **108***a* and *b*) permitting access to said couplings without disturbing said guard member (**103** or **105***a* and *b*).

4,265,064
BASEMENT WATERPROOFING SYSTEM

Allen Parezo, 16112 Laurel Ridge Dr., Laurel, Md. 20810

Filed May 29, 1979, Ser. No. 43,370
Int. Cl.[3] E02D 27/00
U.S. Cl. 52—169.5 14 Claims

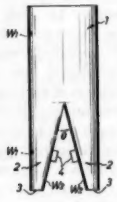


1. For use in a waterproofing system for a subsurface room, a drainage channel, said channel including an elongated substantially vertical planar front panel, said front panel having upper and lower edges, and front and rear faces, an elongated substantially horizontal planar top panel, said top panel having a first front edge integral with the rear face of said front panel generally parallel and in spaced relation to the upper and lower edges of said front panel, said top panel having a second rear edge generally parallel to said front edge, a planar rear panel integral with and projecting solely vertically downwardly from the rear edge of said top panel, fluid passage means defined through said rear panel, an integral downwardly directed sealer receiving groove formed along the lower edge of said front panel, and depending support means integral with the top panel between the front and rear panels.

4,265,065
SILO

Shiroyoshi Osada, No. 5-36, Sakura 2-chome, Iwanuma-shi, Miyagi-ken, Japan

Filed Apr. 10, 1979, Ser. No. 28,827
Claims priority, application Japan, May 31, 1978, 53/74768[U]
Int. Cl.[3] B65D 88/26; E04H 7/22
U.S. Cl. 52—197 5 Claims

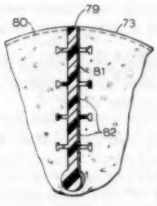


1. A silo for storing and discharging powder comprising a storage portion having a vertical perimeter wall, said vertical perimeter wall having a vertical inside surface, at least first and second hoppers below said storage portion contiguous to the bottom perimeter of said perimeter wall, a first exhaust port at the bottom of said first hopper, a second exhaust port at the bottom of said second hopper, a first vertical internal wall portion in said first hopper forming an integral continuation of said vertical inside surface of said storage portion, said first vertical internal wall portion ending contiguous to at least a first point on said first exhaust port, a second vertical internal wall portion in said second hopper forming an integral continuation of said vertical inside surface of said storage portion, said second vertical internal wall portion ending contiguous to at least a second point on said second exhaust port, said at least first and second exhaust ports being symmetrically disposed about a vertical axis of said storage portion, said first and second exhaust ports being disposed radially inward of said first and second points with respect to said vertical axis whereby at least some of said powder adjacent said vertical inside surface can fall vertically downward and be discharged through said first and second exhaust ports, the upper ends of said at least first and second hoppers dividing the cross sectional area of said storage portion into substantially equal symmetrical contiguous portions each of which is contiguous to said vertical axis, said first and second exhaust ports having a total area substantially less than said cross sectional area of said storage portion, and each of said at least first and second hoppers tapering smoothly to its respective exhaust port.

4,265,066
PRESTRESSED CONCRETE PRESSURE VESSELS

Tung-Yen Lin, El Cerrito; Yue-Chyou Yang, San Francisco, and Philip Y. Chow, Orinda, all of Calif., assignors to T. Y. Lin International, San Francisco, Calif.

Continuation-in-part of Ser. No. 789,634, Apr. 21, 1977, abandoned. This application Jan. 19, 1979, Ser. No. 4,742
Int. Cl.[3] E04C 3/26
U.S. Cl. 52—224 12 Claims



1. A prestressed concrete pressure vessel, comprising:

a very thick-walled concrete structure having an outer encompassing surface and a body,

said body being shaped to provide cavity means in said concrete body for holding a fluid under pressure and conduits providing ingress, egress, and connections for said cavity means,

fluid impermeable linings in and for said cavity means supported by said concrete body,

a series of vertically spaced-apart annular horizontal tendon means embedded in said body adjacent to and spaced inwardly from said outer surface, for prestressing said body, each said horizontal tendon means comprising a plurality of coplanar radially spaced-apart tendons,

a series of U-shaped vertical tendons spaced apart from each other around each cavity of said cavity means, each tendon thereof having two vertical portions on opposite sides of the adjacent cavity and joined by a curved bottom portion,

accompanying post-tensioning means for each said tendon, and

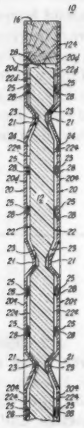
stress-relieving means for generating stress-relieving radially-extending cracks in radially outer portions of said body away from said cavity means, for enhancing the resistance of said body to high internal pressure and to stress due to internal temperatures.

4,265,067

FOAMED PLASTIC CORE DOOR

Fred I. Palmer, St. Charles, Ill., assignor to Masonite Corporation, Chicago, Ill.

Filed May 7, 1979, Ser. No. 36,299
Int. Cl.[3] E04C 2/20
U.S. Cl. 52—309.9 18 Claims



1. A closure member comprising:

an inner core of light weight, resinous plastic, relatively rigid type, cellular foam material having an outwardly facing surface formed with a planar base portion having a plurality of small, outwardly projecting compressible bosses arranged in spaced apart intervals in a matrix pattern thereon;

said projecting bosses being formed to be substantially frusto-conical in shape and including a substantially planar outer face of circular shape;

an outer skin for said closure member having an inside surface confronting said core surface in facing spaced apart relation with said planar base portion and in direct contact against outer faces of said projecting bosses;

said skin formed of thin sheet material comprising compressed wood fibres and having smooth planar outer surface portions and an inner surface compressing some of said bosses;

said core including a plurality of said planar base portions at spaced apart locations on said outwardly facing core surface and an intermediate surface portion separating said planar portions without any projecting bosses formed thereon;

said intermediate surface portion being non-planar and said outer skin including a generally matching non-planar inside surface portion in spaced apart relation therewith; and

adhesive means for securing said outer skin to said projecting bosses.

4,265,068

SECURITY PANEL DOOR

Michael F. Pomroy, Oshkosh, Wis., assignor to Combustion Engineering, Inc., Windsor, Conn.

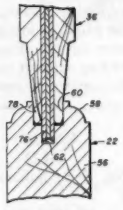
Filed Mar. 23, 1979, Ser. No. 23,121
Int. Cl.[3] E06B 3/26
U.S. Cl. 52—456 11 Claims

1. A security panel door operative for effecting the closing and the opening of a passageway comprising:

(a) a first plurality of surround components made of wood and each having first joint means formed in at least one of the longitudinally extending edges thereof, said first joint means each including a first portion and a second portion, said second portion being located in contiguous relation to said first portion, said first portion consisting of a first rabbeted groove and said second portion consisting of a second rabbeted groove, said second rabbeted groove being coaxially aligned with said first rabbeted groove, said second rabbeted groove being equal in length to said first rabbeted groove and being of a lesser width than said first rabbeted groove;

(b) a second plurality of surround components made of wood and each having second joint means formed in at least one of the longitudinally extending edges thereof, said second joint means each including a third portion and a fourth portion, said third portion being located in contiguous relation to said fourth portion, said third portion consisting of a third rabbeted groove and said fourth portion consisting of a fourth rabbeted groove, said fourth rabbeted groove being coaxially aligned with said third rabbeted groove, said fourth rabbeted groove being equal in length to said third rabbeted groove and being of a lesser width than said third rabbeted groove; and

(c) at least one panel member made of wood, said panel member having third joint means formed in each of a first pair of longitudinally extending edges thereof and fourth joint means formed in each of a second pair of longitudinally extending edges thereof, each of said third joint means including first and second portions located in abutting relation one to another, one of said first and second portions of each of said third joint means consisting of a first tenon and the other of said first and second portions of each of said third joint means consisting of a first complementary portion, each of said first tenons embodying a configuration complementary to each of said second rabbeted grooves so as to be receivable therewithin and each of said first complementary portions embodying a configuration complementary to each of said first rabbeted grooves so as to be receivable therewithin, each of said fourth joint means including third and fourth portions located in abutting relation one to another, one of said third and fourth portions of each of said fourth joint means consisting of a second tenon and the other of said third and fourth portions of each of said fourth joint means consisting of a second complementary portion, each of said second tenons embodying a configuration complementary to each of said fourth rabbeted grooves so as to be receivable therewithin and each of said second complementary portions embodying a configuration complementary to each of said third rabbeted grooves so as to be receivable therewithin, said panel member being joined to said first plurality of surround components through the interengagement of said third joint means of said panel member with said first joint means of said first plurality of surround components, said panel member being joined to said second plurality of surround components through the interengagement of said fourth joint means of said panel member with said second joint means of said second plurality of surround components, each of said first complementary portions having a length longer than each of said first tenons so as to enable said first complementary portion to function to guide the insertion of said first tenon into said



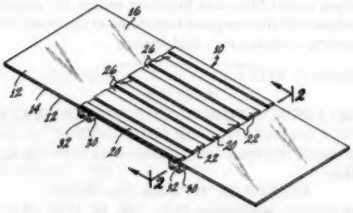
secone rabbeted groove as said first complementary portion is inserted into said first rabbeted groove, and each of said second complementary portions having a length longer than each of said second tenons so as to enable said second complementary portion to function to guide the insertion of said second tenon into said fourth rabbeted groove as said second complementary portion is inserted into said third rabbeted groove.

4,265,069

METHOD OF FORMING FRANGIBLE DOOR CONTAINERS

James J. Heaney, Glendale, Calif., assignor to Anthony's Manufacturing Company, Inc., San Fernando, Calif.

Division of Ser. No. 877,026, Feb. 10, 1978, Pat. No. 4,127,188.
This application Jun. 26, 1978, Ser. No. 918,776
Int. Cl.³ B65B *27/00*
U.S. Cl. 53—399 **9 Claims**



1. A method of packaging a plurality of substantially flat frangible items capable of sustaining load on their edges, and producing a shipping ensemble therefor comprising:

(a) providing a first elongated paperboard sheet means having a longitudinal dimension and longitudinal ends, and having grooves for receiving portions of edges of said items, said grooves formed by a set of spaced, substantially continuous narrow strips of paperboard fastened to said sheet means and extending parallel to the longitudinal dimension of said sheet means

(b) stacking each of said items in said grooves of said first sheet to form a stack of spaced, parallel items;

(c) placing a second said elongated paperboard sheet means identical to said first sheet means over said stack, positioning edges of each item in a corresponding one of said grooves in said second sheet means;

(d) folding longitudinal ends of said first sheet means over end edges of said items;

(e) folding longitudinal ends of said second sheet means over end edges of said items and overlapping said longitudinal ends of said first sheet means to cover all edges of all items in the stack while leaving flat sides of items at ends of the stack exposed to view; and

(f) securing said overlapped ends together to form a shipping package for resiliently holding said stack of spaced parallel items.

4,265,070

METHOD OF AND APPARATUS FOR PACKAGING

Walter A. Mainberger, and Adrian Gerritsen, both of Wayne, N.J., assignors to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Aug. 7, 1979, Ser. No. 64,405
Int. Cl.³ B65B *31/02, 47/02*
U.S. Cl. 53—433 **16 Claims**

1. The method of packaging units in individual sealed packages comprising:

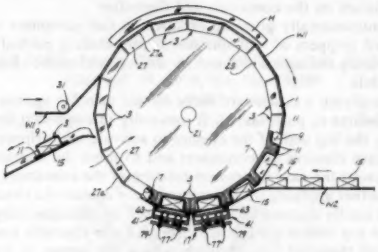
continuously feeding forward a web of thermoformable plastic material at one of different speeds;

forming open-mouthed receptacles in the web with the receptacles spaced at intervals longitudinally of the web and with portions of the web surrounding the mouths of the receptacles for the sealing thereto of a cover web for forming sealed packages;

introducing units to be packaged into said receptacles;

continuously feeding a second web of thermoplastic material constituting a cover web into engagement with said portions of the first web for forward movement together with the first web;

bringing a sealing member into engagement under pressure



with the cover web to press it against said portions of the first web and heating said webs where pressed together for heat-sealing them together around the open mouths of the receptacles;

moving the sealing member forward at the speed at which the web is fed forward; and

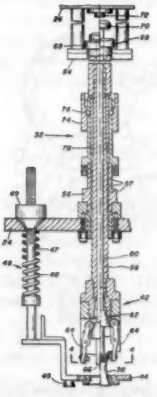
maintaining the sealing member is engagement with the webs for a timed sealing interval which is the same for the different speeds of the web and then withdrawing the sealing member from the webs.

4,265,071

APPARATUS AND METHOD FOR REMOVING CLOSURES FROM CONTAINERS ASSEMBLED IN CASES

James D. Smith, Freeport, and James A. Miller, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 864,776, Dec. 27, 1977, abandoned.
This application Sep. 12, 1979, Ser. No. 75,150
Int. Cl.³ B65B *43/40*
U.S. Cl. 53—492 **12 Claims**



8. A method of removing screw-off closures from containers assembled in cases, which comprises:

(a) guiding cases of containers seriatum into and out of a temporary stop at a location disposed below multiple

spindles, with each spindle aligned with each container-receiving position in a case;

(b) non-rotatably translating said spindles axially with respect to the containers in a case until grippers on the bottom end of said spindles contact screw-off closures on the containers;

(c) mechanically detecting the presence of a closure on a container for said gripper on each spindle to grip a closure on a container by contacting the lower end of a shaft slidably arranged within a hollow screw of each spindle and extending through said gripper with the top wall of a closure on the container; and thereafter

(d) automatically grasping closures on the containers with said grippers of said spindles as said shaft is pushed upwardly through said screw by the top wall of the closure, while

(e) applying a downward force of said spindles against the closures to push said shaft upwardly through said screw by the top wall of the closure to activate said grippers to grasp closures on containers and to press the containers against the case to prevent rotation of the containers;

(f) further applying the downward force against the closures to axially displace said screw of each spindle upwardly by the top wall of the closure through a non-rotatable associated threaded nut, through which the screw is freely rotatable, to rotate said screw and grippers thereon in said nut with torque sufficient to break any temporary seal securing the closures to the containers to unscrew the closures from the containers;

(g) non-rotatably translating said spindles axially with respect to the containers to move said grippers and unscrewed closures away from the containers; then

(h) releasing the grasp of said gripper and ejecting the removed closures from said grippers by forcing the upper end of said shaft downwardly to push said shaft downwardly through said hollow screw.

4,265,072

APPARATUS FOR CHARGING RECEPTACLES WITH ITEMS OF LIKE SIZE AND SHAPE

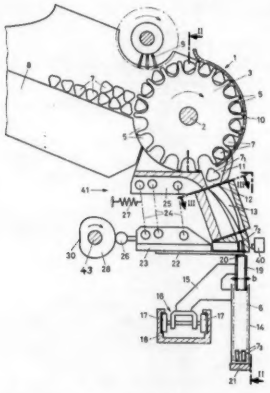
Alwin Egli, Neuweg 15, CH-8222 Beringen, Switzerland

Filed Jul. 19, 1979, Ser. No. 59,021

Claims priority, application Switzerland, Jul. 21, 1978, 7914/78

Int. Cl.[3] **B65B** *57/20, 35/56;* **B65G** *47/24*

U.S. Cl. 53—501 **13 Claims**



1. In an apparatus for charging receptacles with items of like size and shape, including at least one counting and charging unit having a plurality of axially aligned, toothed counting wheels having a plurality of tooth gaps along their periphery for receiving individual items; and a funnel arranged underneath the counting wheels for receiving items discharged by the counting wheels and for directing them into a receptacle arranged below the funnel; the improvement comprising

(a) means defining a plurality of orienting channels, a separate one of said orienting channels being arranged between said funnel and each said counting wheel; each said orienting channel receiving items in sequence from the associated counting wheel; the items being of plate-like configuration having a main plane parallel to the opposite, relatively large item faces; the receptacles having a narrow opening with relatively long and relatively short sides and a main plane being parallel to the height dimension of the receptacle and to the long sides of the receptacle opening; each said orienting channel being further arranged to orient the items such that upon discharge of each item from the orienting channels into said funnel, the main plane of each item is parallel to the main plane of the receptacle situated underneath said funnel;

(b) blocking means cooperating with each said orienting channel for periodically opening and closing the orienting channels; and

(c) means controlling said blocking means for permitting a simultaneous discharge of two items at the most from said orienting channels into said funnel.

4,265,073

APPARATUS FOR FORMING AND OVERWRAPPING BATCHES OF PRODUCTS

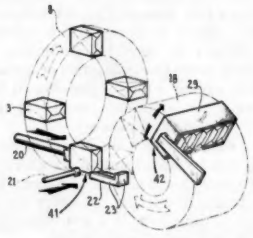
Enzo Seragnoli, Bologna, Italy, assignor to G.D. S.p.A., Bologna, Italy

Filed Jul. 23, 1979, Ser. No. 59,778

Claims priority, application Italy, Sep. 14, 1978, 3532 A/78

Int. Cl.[3] **B65B** *35/46, 11/32*

U.S. Cl. 53—542 **6 Claims**



1. In an improved apparatus for forming and overwrapping batches of products of flat shape which has a first rotating head for infeeding individual products, movable intermittently around its own axis and provided with equidistant radial compartments in which individual products are accommodated, the compartments being so positioned that each one adopts, at successive times and during halting of the first rotating head, two positions which are interspaced angularly by 90°; a second rotating head for forming batches of the individual products, whose axis of rotation is perpendicular to the axis of the first rotating head and which is provided with equidistant radial compartments so dimensioned that each can accommodate a desired batch of the individual products; a mechanism for wrapping the batches, which includes a further head that rotates intermittently around an axis parallel to the axis of rotation of the second rotating head and is provided with equidistant radial compartments so dimensioned that each can accept a batch of products withdrawn from the second rotating head; ejector and pusher devices located between the second rotating head and the wrapping mechanism for transferring batches of products from the second rotating head to the wrapping mechanism; an improvement comprising a bed plate; a slideable support casing resting on said bed plate and slideable with respect thereto, said second rotating head and

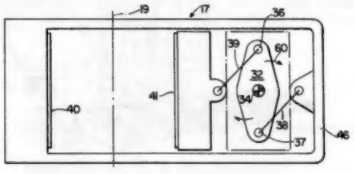
said wrapping mechanism being supported by said casing which rests on said bed plate; slide guides of said support casing for guiding said plate to allow it to slide alternately in direction of said first rotating head, along a path such that said second rotating head is positioned at successive times, in vicinity of two transfer stations for transfer of individual products from said first rotating head to said second rotating head, at points corresponding to two waiting positions for each of said 90° angularly interspaced compartments in said first rotating head; at least one pair of pusher devices in vicinity of said first rotating head and between this and said second rotating head, said pair of pusher devices being movable parallel to the axes of said first rotating head and of said second rotating head, respectively, to withdraw individual products from said first rotating head and to transfer them to said second rotating head; means for adjusting the sliding movement of said support casing with respect to said bed plate on which the former rests; a setting device connected to said means for adjusting to stably position said support casing, with said second rotating head, in vicinity of said transfer stations, said setting device including locking means which act on said slide guides of said said support casing.

4,265,074

WEB PROCESSING MECHANISM FOR FORMING PACKAGES

Daniel L. Reuter, Waldorf, Md.; Philip L. Reid, Duncan, S.C.; Charles M. Blackburn, Davidsonville, Md., and Clifton W. Heffner, Charlotte, N.C., assignors to Sigma Systems, Inc., Capitol Heights, Md.

Filed Oct. 30, 1978, Ser. No. 955,752
Int. Cl.³ B65B *9/10, 9/12, 51/30*
U.S. Cl. 53—551 **7 Claims**



1. A package forming machine system for feeding a continuous web provided from a supply roll through a tubular member folding over and sealing the web edges longitudinally, and thereafter for transversely processing and sealing the web to form a sequence of packages by a processor mechanism transversely engaging the web as the web is fed past the forming member in tubular form, said processor mechanism comprising in combination,

intermittently operated web transport means for pulling the web through the system constituting a reciprocable carriage mechanism pivotable about an axis and having mounted thereon remote from the pivot axis a pair of movable jaws for reciprocating as the carriage mechanism is pivoted and operable for gripping during only one direction of reciprocation said longitudinally sealed web and pulling off a length of web from said supply roll, motive means for relatively moving said jaws into and out of engagement with said web on opposite sides thereof in a plane substantially perpendicular to the web comprising a reciprocable member providing motive power for moving said jaws in and out of said engagement during said one direction of engagement,

a pivot axis perpendicular to the plane of movement of the jaws carried by said carriage mechanism,

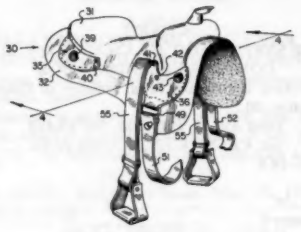
a rocker member with opposed arms extending from said pivot axis and pivotable about said axis connected for rotation through a reciprocating cycle arc of less than 360° by said reciprocable member, and a link connecting either rocker arm respectively to one of said jaws for moving them simultaneously toward and away from engagement with the web in response to reciprocation of said reciprocable member, wherein the linkage lengths and jaw movement are related so that the rocker arm extends the links to a position substantially along a straight line as the jaws engage said web, thereby to provide high pressure on the jaws with relatively small power produced by said motive means.

4,265,075

SADDLE

Don M. Motsenbocker, Rte. 2, Box 35, Wylie, Tex. 75098

Filed Jul. 19, 1979, Ser. No. 59,099
Int. Cl.³ B68C *1/00*
U.S. Cl. 54—44 **2 Claims**



1. A saddle comprising:

a saddle tree having a seat region on the top thereof and having four corner areas;

padding positioned atop said tree;

a layer of upholstery covering said padding and securing it to said tree;

a padded flexible saddle skirt underlying said saddle tree;

four connecting flaps affixed to said saddle skirt one flap being positioned at each corner area of said tree, a portion of each flap extending over the margins of said tree and upholstery, said connecting flaps being affixed to said skirt along their margins to form with said skirt pockets into which the corner areas of said tree are received;

removable connecting means for said connecting flaps attaching the overlapping portion of said flaps to said tree through said upholstery;

cinch rings mounted on the connecting flaps at the front corners of said saddle tree; and

slots in said saddle tree for accepting a stirrup strap therethrough.

4,265,076

DEVICE FOR TREATING AGRICULTURAL PRODUCTS TO ENHANCE DRYING

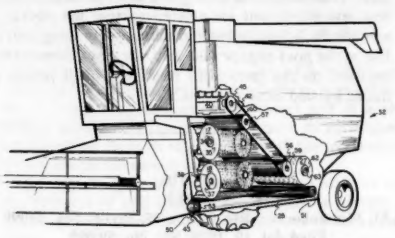
Gary W. Krutz, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Continuation of Ser. No. 901,067, Apr. 28, 1978, abandoned. This application Feb. 25, 1980, Ser. No. 124,631
Int. Cl.³ A01D *45/00*
U.S. Cl. 56—14.4 **30 Claims**

1. A device for maceration of agricultural products, said device comprising:

first and second movable means having substantially horizontally extending portions with peripheries contiguous to one another for receiving agricultural products therebetween, said first movable means being mounted above said second movable means with one of said movable

means moving at a different rate of speed than the other of said movable means whereby agricultural products received between said portions of said movable means are macerated while passing therebetween.

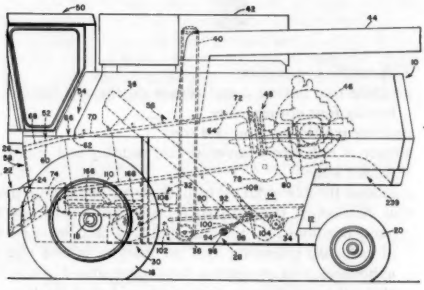


4,265,077

BLOWER SYSTEM FOR AN AXIAL FLOW ROTARY COMBINE CLEANING SHOE

Loren W. Peters, Bettendorf, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 3, 1979, Ser. No. 63,423
Int. Cl.[3] A01F *12/20*; A01D *14/02*
U.S. Cl. 56—14.6 **30 Claims**



1. In a mobile grain harvester for harvesting and processing crop material, including a generally fore-and-aft extending separator body, containing between opposite fore-and-aft extending housing side walls an axial flow rotary generally mechanically activated, separator having an at least partially foraminous casing and a cleaner below the separator, wherein there is a generally downward flow of at least a portion of the crop material from the foramina of the casing to the cleaner, said flow being dispersed initially over substantially the length of the separator casing, a blower assembly operatively associated with and augmenting the function of the cleaner comprising:

a transversely arrayed plurality of spaced coaxial centrifugal blower wheels;

a plurality of blower housings, each housing partially enclosing one of said blower wheels, for admitting inlet air generally axially to the blower wheels and controlling delivery of air from the wheel, each housing including opposite fore-and-aft extending side walls, each wall having an inlet air opening, and first and second scroll portions, each scroll portion partially wrapping a blower wheel and having a cut-off edge closely adjacent the wheel periphery and a scroll wall progressively diverging, with respect to the direction of rotation of the blower wheel, from the cut-off edge and from the wheel periphery so as to permit and receive generally tangential air delivery from the blower wheel and extending to meet the opposite blower housing side walls, the cut-off edge of the second scroll portion being spaced circumferentially from that of the first; and

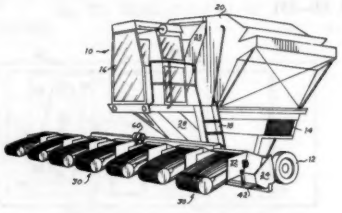
first and second duct means defining at least partially first and second ducts each having opposite walls including an outer wall approximately tangential to and extending and contiguous with the first and second scroll walls respectively and an inner duct wall extending from said second and first scroll cut-off edges respectively, said ducts receiving and directing the air discharged into the first and second scroll portions, the first duct means being disposed to deliver air rearwardly for engaging at least a portion of the dispersed flow of crop material emerging from the foramina of the separator casing and the second duct means being disposed to deliver air for engaging at least a portion of the crop material received by the cleaner.

4,265,078

COTTON GLEANER

William D. Lay, P.O. Box 285, Idalou, Tex. 79329

Filed Sep. 20, 1979, Ser. No. 77,327
Int. Cl.[3] A01D *45/18*
U.S. Cl. 56—28 **8 Claims**



1. A cotton gleaner comprising the combination of:

a. a wheeled vehicle,

b. a header on the vehicle,

c. a basket on the vehicle,

d. an elevator on the vehicle for conveying gleaned cotton from the header to the basket,

e. a cross conveyor in the header for moving the gleaned cotton to the elevator,

f. a plurality of gleaner units,

g. each gleaner unit having two side plates attached to the header,

h. each unit having a drive shaft journalled in bearings on the side plates,

j. a plurality of drive pulleys on each shaft, and

k. a slotted gleaner belt trained around each pulley,

m. a plurality of ground pulleys,

n. a pivot shaft extending between the side plates,

o. a plurality of arms having a distal end and a pivot end journalled to the pivot shaft, and

p. the belt is also trained around one of the plurality of ground pulleys;

q. a bifurcation on the distal end of each arm,

r. two of said ground pulleys attached to a single ground shaft, and

s. two distal bearings on each of the ground shafts,

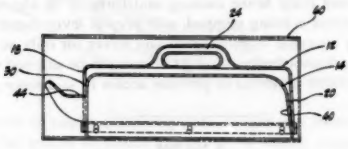
t. the two distal bearings of each ground shaft attached to the bifurcation of the arm.

4,265,079

RIGID GRASS CATCHER

Ralph L. Hoffmann, St. Louis, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.

Filed Feb. 5, 1979, Ser. No. 9,164
Int. Cl.[3] A01D *35/22*
U.S. Cl. 56—202 5 Claims



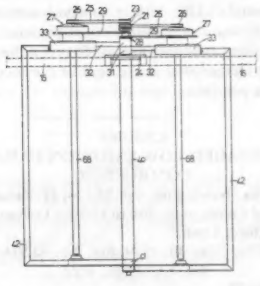
1. A rigid grass catcher for a lawn mower having a housing provided with a grass discharge opening, the catcher comprising:
(a) a first hollow body section including opposed longitudinal sidewalls, a transverse wall extending between said sidewalls and a front end opening,
(b) a second hollow body section having opposed longitudinal sidewalls, a transverse wall extending between said sidewalls, and outwardly projecting lip at the front end and a front end opening,
(c) means connecting the body sections together to form a relatively deep grass catching container adapted to receive grass clippings in a grass catching mode, and
(d) the second section being invertible and nestable within the first section, the lip of the second section being received by the opening of the first section, in a storage mode.

4,265,080

HARVESTING APPARATUS

Sydney A. Goldsmith, 51 Middleton Rd., Christchurch, New Zealand

Filed Mar. 19, 1979, Ser. No. 21,636
Claims priority, application New Zealand, Mar. 10, 1978, 186664; Dec. 15, 1978, 189179
Int. Cl.[3] A01D *46/00*
U.S. Cl. 56—330 12 Claims



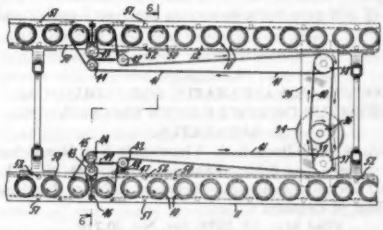
1. A mounting and drive arrangement for shaker head assemblies of a harvesting apparatus, comprising:
(a) at least one pair of vibrating shaker head assemblies, each of the assemblies having an input and an output with a respective associated input and output member;
(b) a primer mover;
(c) means for converting rotary motion applied to each input into a torsional vibration superimposed on the associated output member, the output members being mounted so as to enable a rotary motion to be superimposed thereon;
(d) an intermediate shaft;
(e) a pair of coupled pulley wheels coupled for rotation of said intermediate shaft, each of said pulley wheels having a positively engaging belt which couples it to the input of a shaker head assembly;
(f) drive means for coupling said prime mover to said coupled pulley wheels; and
(g) a pair of coupled sprocket wheels mounted for rotation on said intermediate shaft, each of the sprocket wheels being engaged by an endless chain which extends about a toothed ring located on a housing of each respective shaker head assembly, each shaker head assembly being supported by a respective mounting means, each said respective mounting means being mounted for pivotal movement independent of the other mounting means about an axis which is substantially coaxial with the intermediate shaft.

4,265,081

DRIVEN SPINNING RING DEVICE FOR YARN SPINNING AND TWISTING MACHINES

Rufino Creus, Sabadell, Spain, assignor to Spurmach Espana S. L., Sabadell, Spain

Continuation-in-part of Ser. No. 694,998, Jun. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 663,121, Mar. 2, 1976, Pat. No. 4,114,359. This application Apr. 10, 1978, Ser. No. 895,010
Claims priority, application Spain, Mar. 15, 1975, 435.657; Jun. 4, 1976, 448.589
Int. Cl.[3] D01H *7/58, 1/241*
U.S. Cl. 57—75 17 Claims



1. A yarn spinning or twisting machine comprising a traveler for guiding yarn in a spinning or twisting operation about a spindle axis, a support ring for the traveler for guiding it in a circular path around the spindle axis under the influence of the yarn, a ring holder rotatably mounted to enable the ring to rotate in the same direction as the traveler to decrease the relative movement between the ring and the traveler, a drive source for imparting a positive drive to the ring holder in the same direction as the traveler, and automatic means for controlling the drive imparted to the ring holder at predetermined points of time during the spinning or twisting operation, said automatic means operating on startup to delay the positive drive imparted to the ring holder until a point of time after the startup of the spinning or twisting operation, and thereafter to impart a positive drive to the ring holder at the end of said delay and to render inoperative the positive drive imparted to the ring holder prior to the discontinuance of the spinning or twisting operation.

17. A yarn spinning or twisting method comprising the steps of guiding yarn through a traveler and winding the yarn in a spinning or twisting operation about a spindle axis, the traveler being slidably mounted on a support ring so that it can be guided in a circular path around a spindle axis under the influence of the yarn, imparting a positive drive to the support ring in the same direction as the movement of the traveler under the influence of the yarn, delaying the drive to the support ring

until after the initiation of the winding operation and disabling the drive to the support ring prior to the discontinuance of the winding operation.

4,265,082

SPUN-LIKE YARN AND A PROCESS FOR MANUFACTURING THE SAME

Yoshiyuki Sasaki, Takatsuki, and Katsuyuki Kasaoka, Ibaraki, both of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Oct. 9, 1979, Ser. No. 82,722
Claims priority, application Japan, Oct. 20, 1978, 53-128559
Int. Cl.³ D02G *3/34*
U.S. Cl. 57—207 **8 Claims**

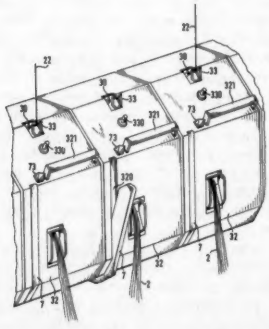
1. A spun-like yarn comprising; a fiber bundle which essentially comprises staple fibers and which substantially has no true twist therein along said yarn; and surface fibers of thermoplastic synthetic staple fibers which wrap around said fiber bundle so that said fiber bundle is cohered, wherein said surface fibers form a plurality of individual wrapping portions spaced along said yarn, each of said wrapping portions being securely wrapped around said fiber bundle in a direction substantially perpendicular to said fiber bundle, and in each of said wrapping portions said surface fibers are interlaced with each other, the number of said wrapping portions being at least 2 per the length of 1 cm of said yarn, and the mean fiber packing density of said yarn being in a range between 2 cm^3/g and 8 cm^3/g.

4,265,083

PROCESS AND APPARATUS FOR INDIVIDUAL PIECING UP OF SINGLE OPEN END SPINNING APPARATUS

Erwin Braun; Erich Bock, both of Ingolstadt; Karl Handschuch, Lippertshofen, and Edmund Schuller, Ingolstadt, all of Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,210
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1978, 2811960
Int. Cl.³ D01H *7/885, 15/00*
U.S. Cl. 57—263 **20 Claims**



1. An apparatus for individually piecing-up yarn on an open-end spinning machine, a spinning rotor carried on said machine, a rotor brake provided for stopping said spinning rotor responsive to being activated, a rotor cleaning apparatus for cleaning said rotor responsive to being activated, and a cover pivotally carried on said machine and extending over said rotor for providing access to said rotor, the improvement comprising:

means for supporting said rotor cleaning apparatus on said cover; and

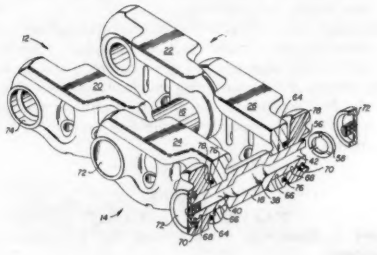
a pivotal lever means movable relative to said cover for simultaneously activating said rotor cleaning apparatus and said rotor brake causing said rotor to be cleaned as said rotor is being stopped, said pivotal lever means also being movable together with said cover for only activating said rotor brake causing said rotor to be stopped when said cover is moved to provide access to said rotor.

4,265,084

METHOD AND APPARATUS FOR ASSEMBLY OF A TRACK CHAIN WITH MINIMUM END PLAY

Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00504, § 371 Date Jul. 16, 1981, § 102(e) Date Jul. 16, 1981, PCT Pub. No. WO81/00223, PCT Pub. Date Feb. 5, 1981.
This PCT application filed Jul. 16, 1979, Ser. No. 98,143
Int. Cl.³ F16G *13/06*
U.S. Cl. 59—7 **16 Claims**



1. A method of assembling a joint comprising:

Step (a) pressing a first member (**20**) a first preselected distance onto one of first and second ends (**28,30**) of a pin (**16**);

Step (b) urging a second member (**24**) onto the pin (**16**) adjacent the first member (**20**) and simultaneously pressing the first member (**20**) with the second member (**24**) onto the pin (**16**) to a second preselected distance; and

Step (c) installing retaining means (**58**) onto the pin (**16**) and permitting free pivotal movement of the second member (**24**) on the pin (**16**).

4,265,085

RADIALLY STAGED LOW EMISSION CAN-ANNULAR COMBUSTOR

Theodore G. Fox, Newington, and Melvin H. Zeisser, Marlborough, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 30, 1979, Ser. No. 43,916
Int. Cl.³ F02C *7/22*
U.S. Cl. 60—39.06 **10 Claims**

1. A burner construction including:

a burner duct;

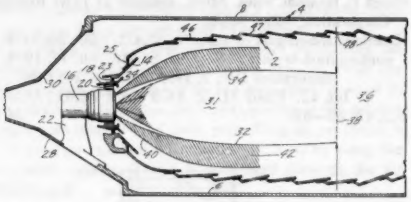
a can in said duct having an upstream end cap;

a fuel nozzle in said cap having:

means for delivering primary fuel in a low angle spray for idle and low power,

other means surrounding said first means for delivering secondary fuel in a hollow cone surrounding and spaced

from the low angle spray for higher power operation with the primary fuel; and



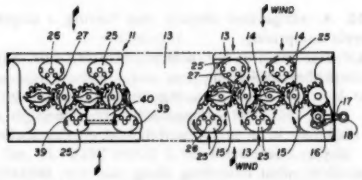
a row of axially extending holes in said cap surrounding the nozzle to direct a flow of air axially around the spray of primary fuel.

4,265,086

WIND FENCE

Harry H. Bahrenburg, 11 Sherman Ct., Bethpage, N.Y. 11714

Filed Jul. 16, 1979, Ser. No. 58,090
Int. Cl.[3] F03D *3/02, 3/04, 9/00*
U.S. Cl. 60—398 **1 Claim**



1. A linear terrestial weathervaneless wind fence for the commercial production of electricity and adapted to engage winds from any direction comprising a plurality of suitably spaced-apart vertically disposed tall support columns; structural support means disposed between adjacent columns; a plurality of rectangular wind energy extracting modules disposed within said structural support means; each of said modules having a plurality of parallel vertically disposed wind actuated rotors; suitably curved vanes disposed on said rotors to effect unidirectional rotation; tapered, tear drop in cross section, vertically disposed struts for directing the wind to said rotors, disposed alternately above and below said rotors; a gear secured to each rotor, with each adjacent gear being in direct engagement with one another; conduit and pump means for tranferring gear energy into pressurized liquid; and turbine and generator means for converting said pressurized liquid into electricity.

4,265,087

HYDRAULIC MOTOR SEAL AND VALVE ARRANGEMENT

Denny L. Peeples, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 11, 1979, Ser. No. 84,054
Int. Cl.[3] B60T *13/12*
U.S. Cl. 60—550 **2 Claims**

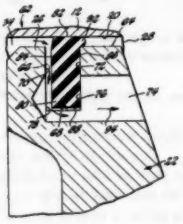
1. In a hydraulic motor having a cylinder, a pressure responsive piston reciprocably received in said cylinder and dividing said cylinder into a pressure chamber and an exhaust chamber, means for selectively causing hydraulic pressure in said pressure chamber to act on said piston and move it axially in one direction in said cylinder, manually operated means for selectively moving said piston axially in said one direction in said cylinder in the absence of hydraulic pressure in said pressure chamber, and piston return means; a seal and valve arrangement comprising:

an annular groove in the outer peripheral surface of said piston, said annular groove having substantially flat side walls and a bottom wall;

passage means spaced radially inwardly of the outer peripheral surface of said piston providing a fluid connection between said groove and said pressure chamber, said passage means intersecting said groove bottom wall and the radially inner portions of said side walls;

and a rubber-like annular seal having a substantially rectangular cross section and received in said groove, the outer peripheral surface of said seal sealingly and slidably engaging said cylinder, the axial thickness of said seal being less than the axial thickness of said annular groove;

said piston outer peripheral surface being spaced radially inwardly from said cylinder, said seal being forced to one position by pressure in said hydraulic pressure chamber and said passage means tightly against most of the area of



one groove side wall and in tight sealing but sliding engagement with said cylinder when hydraulic pressure in said pressure chamber acts to move said piston in said one axial direction, said seal being moved axially relative to said groove to another position spaced from said one groove side wall and engaged with most of the area of the other of said groove side walls when said manually operated means moves said piston axially in said one axial direction, said seal then being so positioned as to open a fluid flow path from said exhaust chamber between said cylinder and the outer peripheral surface of said piston and in said groove between said seal and said one groove side wall and radially inwardly of said seal and through said passage means to said pressure chamber, said open fluid flow path substantially preventing pressurization of hydraulic fluid in said exhaust chamber when said piston is manually moved axially so that manually operated movement of said piston is not hydraulically resisted by pressure in said exhaust chamber.

4,265,088

SYSTEM FOR TREATING AND RECOVERING ENERGY FROM EXHAUST GASES

Harald F. Funk, 68 Elm St., Murray Hill, N.J. 07974

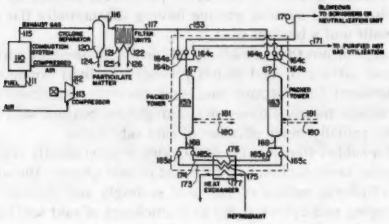
Continuation-in-part of Ser. No. 674,219, Apr. 6, 1976, Pat. No. 4,126,000, which is a continuation-in-part of Ser. No. 565,045, Apr. 4, 1975, Pat. No. 3,970,524, which is a continuation-in-part of Ser. No. 486,562, Jul. 8, 1974, abandoned, which is a continuation-in-part of Ser. No. 252,610, May 12, 1972, abandoned. This application Nov. 17, 1978, Ser. No. 962,103 The portion of the term of this patent subsequent to Nov. 21, 1995, has been disclaimed.
Int. Cl.[3] F01K *21/00*
U.S. Cl. 60—648 **32 Claims**

1. A method of treating hot exhaust gas, comprising the steps of:

(a) removing particulate matter from the gas;

(b) cooling the gas to effect a separation of harmful, less volatile components from more volatile components;

(c) compressing the gas at some time prior to the completion of step (b);



(d) discharging the more volatile components to atmosphere; and

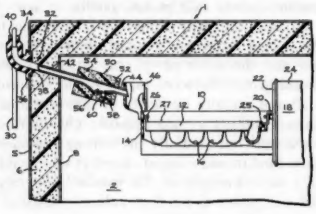
(e) processing the less volatile components.

4,265,089

ICE MAKING APPARATUS AND METHOD

William M. Webb, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 11, 1980, Ser. No. 120,184
Int. Cl.³ F25C *1/10*
U.S. Cl. 62—72 **23 Claims**



21. The improved method of controlling the ejection of ice pieces made by an automatic ice maker contained in a freezer compartment, the ice maker including a flexible mold containing a plurality of spaced cavities for forming ice pieces and means responsive to a signal for flexing the mold to eject the ice pieces from the mold, water conduit means for introducing water into the mold, a water valve, and signal means including temperature sensing means to actuate the means for flexing the mold to eject ice pieces from the mold, comprising:

providing a stationary, ice forming chamber in the freezer compartment and spaced from the flexible mold and in water flow communication with the conduit means delivering water from the water valve to the mold;

retaining a small portion of the water passing through the conduit means in the ice forming chamber,

sensing the temperature of the ice forming chamber with the temperature sensing means, and

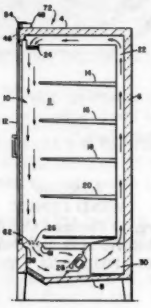
generating a signal when the water in the mold reaches a preselected temperature below 32° F.

4,265,090

GLASS DOOR MERCHANDISER WITH AMBIENT AIR DEFROST

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 25,473, Mar. 30, 1979, and a continuation-in-part of Ser. No. 58,916, Jul. 19, 1979. This application Dec. 7, 1979, Ser. No. 101,069
Int. Cl.³ F25D *21/12*; A47F *3/04*; F25D *17/04*
U.S. Cl. 62—82 **34 Claims**



16. A refrigerated display case having a display section therein comprising:

a cabinet having top, bottom, rear and side walls and an opening at its front;

at least one door covering said front opening, said door being movable for enabling access through said front opening to products within said display section of said display case;

an air conduit extending along said top, bottom and rear walls and having an outlet opening and an inlet opening at opposing end thereof, said outlet opening and said inlet opening being arranged in alignment so that air leaving said outlet opening will be directed towards and received by said inlet opening and form an air curtain across said front opening along a path inside of said door;

an air band establishing means for establishing a flow of refrigerated air through said air conduit during a refrigeration cycle of operation, said air band establishing means including refrigeration means and means for creating a positive pressure air flow through said refrigeration means; and

defrost means for defrosting said display case when said display case is operated in a defrost cycle of operation, said defrost means causes ambient air to be drawn into said air conduit and to pass through the entire said air conduit, and passing such ambient air through said refrigeration means for defrosting said refrigeration means and said defrost means including means for opening said door during a defrost cycle of operation for enabling the ambient air to be drawn through said front opening in said cabinet into said air conduit and enabling the ambient air that has passed through said air conduit to be expelled out of said display case through said front opening.

28. A method of operating a refrigerated display case having:

a cabinet with top, bottom, rear and side walls, an interior display section, and an opening at its front for enabling access to products within said display section; at least one door covering the front opening and being movable for enabling access through the front opening, an air conduit extending along the top, bottom and rear walls and having an outlet opening and an inlet opening at opposing ends thereof, with the outlet opening and the inlet opening being arranged in alignment so that air leaving the outlet opening will be directed towards and received by the inlet

opening; and an evaporator coil being arranged within the air conduit;

the method comprising the steps of:

selectively operating the display case in a refrigeration cycle of operation and a defrost cycle of operation;

during a refrigeration cycle of operation, circulating air through the air conduit so that air is expelled from the outlet opening and received by the inlet opening so as to form an air curtain across the front opening in the cabinet along a path inside of the door, propelling the air through an evaporator coil and refrigerating such air by using the evaporator coil as the air is circulated through the air conduit; and

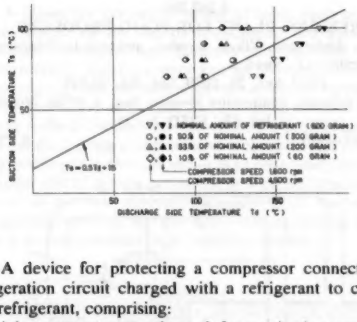
during a defrost cycle of operation, causing unrefrigerated ambient air to be drawn into the air conduit and to pass through the air conduit, including that portion located along the rear wall of the cabinet, and opening the door and expelling the ambient air that has passed through the air conduit from the cabinet through the front opening in the cabinet.

4,265,091

REFRIGERANT COMPRESSOR PROTECTING DEVICE

Hisao Kobayashi, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 21, 1980, Ser. No. 142,622
Claims priority, application Japan, Jun. 7, 1979, 54-71546
Int. Cl.[3] F25B *49/00, 1/00;* **F04B** *49/10*
U.S. Cl. 62—126 **11 Claims**


SUCTION SIDE TEMPERATURE Ts (°C)
DISCHARGE SIDE TEMPERATURE Td (°C)
Ts = 0.5Td + 15
COMPRESSOR SPEED 1800 rpm
COMPRESSOR SPEED 4800 rpm

1. A device for protecting a compressor connected to a refrigeration circuit charged with a refrigerant to compress said refrigerant, comprising:

an inlet temperature sensing unit for monitoring temperature of a suction port of said compressor;

an outlet temperature sensing unit for monitoring temperature of a discharge port of said compressor;

a judging unit for judging a refrigerant amount as insufficient and generating a signal to indicate the insufficiency in the event a coordinate point determined by outputs of said two temperature sensing units was located in a refrigerant-insufficiency region of coordinates, said refrigerant-insufficiency region being separated from a refrigerant-sufficiency region by a line obtained and expressing a specific relationship known between the inlet and outlet temperatures as measured while the refrigerant amount is held at a predetermined lower limit; and

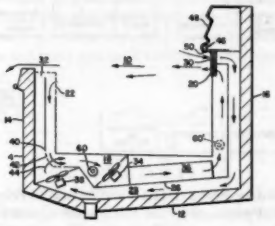
a working means for taking action necessary to protect said compressor against troubles resulting from shortage of the refrigerant, upon reception of said signal generated from said judging unit.

4,265,092

REFRIGERATED DISPLAY CASE USING AIR DEFROST WITH SUPPLEMENTAL HEATER

Fayez Abraham, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed Dec. 26, 1979, Ser. No. 107,261
Int. Cl.[3] F25D *21/08*
U.S. Cl. 62—155 **4 Claims**



1. A refrigerated display cabinet having an access opening for communicating a storage and display space in the cabinet with the ambient atmosphere;

at least one outlet means extending across one edge of said access opening;

at least one corresponding inlet means extending across an opposite edge of said access opening;

conduit means extending from said at least one inlet means around said cabinet to said at least one outlet means;

refrigeration means located in said conduit means;

air circulating means for propelling air through said conduit means over and/or around and/or through said refrigeration means in a first direction during a refrigeration cycle, and in a second direction, substantially opposite said first direction during a defrost cycle, whereby during a defrost cycle ambient air is drawn into said conduit means through said outlet means and is passed over and/or around and/or through said refrigeration means to defrost same;

supplemental defrost means located in said conduit means upstream of said refrigeration means in the direction of air flow through said conduit means in the defrost cycle; and,

sensing and control means coupled with said supplemental defrost means for sensing defrost conditions during the defrost cycle and for energizing said supplemental defrost means upon the detection of an abnormal defrost condition to thereby accelerate the rate of defrost.

4,265,093

EVAPORATOR FEED AND CONTROL SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 4, 1979, Ser. No. 72,538
Int. Cl.[3] F25B *41/00, 39/02;* **G05D** *15/00*
U.S. Cl. 62—198 **8 Claims**

8. In a refrigerating apparatus, an evaporator feed and control system which maintains a relatively high level of stability over a wide range of varying loads, said evaporator system comprising:

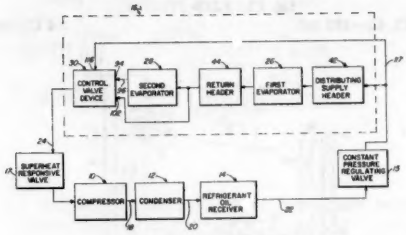
first evaporator means having a multiple pass inlet and a single pass outlet, the inlet being adapted to receive a refrigerant-oil mixture;

second evaporator means having an inlet and an outlet, the inlet of said second evaporator being connected to the output of said first evaporator;

valve means including a first inlet connected to the outlet of said second evaporator, a second inlet connected to the outlet of said first evaporator, and an outlet adapted for bypassing at least a portion of the refrigerant-oil mixture flowing in said first evaporator from the second evapora-

tor directly through a suction line to a compressor when the system is operating at a reduced capacity; and

said valve means including a control valve device having a first valve opening and a second valve opening, the first



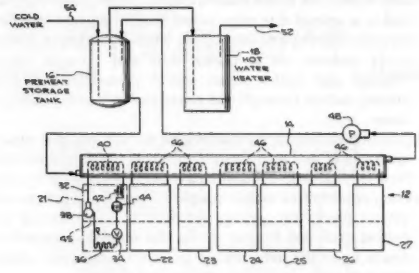
valve opening being opened and closed in response to the differential pressure of the refrigerant across the entrance of said first evaporator means and the exit of said second evaporator means, and the second opening being closed and opened in opposition to the action of the first opening.

4,265,094

UNITIZED REFRIGERATION AND WATER HEATING SYSTEM

Hans Haasis, Jr., 1421 Duarte Cir., Simi Valley, Calif. 93065

Filed Oct. 4, 1979, Ser. No. 81,675
Int. Cl.[3] F25B *27/02*; A28F *11/00*
U.S. Cl. 62—238.6 **16 Claims**



1. A unitized multi-unit refrigeration and water heating system in which manifolding of piping is avoided and potable water is protected against contamination, comprising:

an elongated refrigeration installation including a plurality of refrigeration units;

an elongated heat exchanger pipe mounted generally coextensively with said refrigeration installation, said heat exchange pipe having a diameter of at least four inches and a length of at least ten feet;

a plurality of double walled condenser coils formed of standard metal tubing, mounted within said heat exchanger pipe, and having connections extending out from said heat exchanger pipe along the length thereof, said coils having different heat exchange capabilities corresponding respectively to the requirements of the individual refrigeration units in said installation;

non-toxic heat exchange liquid located between the inner and outer tubing of said double walled coils;

low pressure seals located between said inner and outer tubing outside of said heat exchanger pipe;

means for connecting the high pressure refrigeration fluid from individual refrigeration units to corresponding individual ones of said condenser coils; and

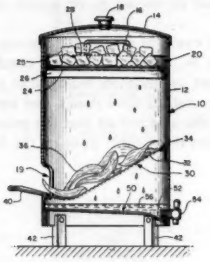
means for supplying water to be heated to one end of said heat exchanger pipe and for withdrawing heated water from the other end thereof.

4,265,095

APPARATUS FOR STORING AND DISPENSING LEAFY VEGETABLES

John W. McConachie, 421 May St., Elmhurst, Ill. 60126

Filed Jun. 29, 1979, Ser. No. 53,222
Int. Cl.[3] F25D *17/02*
U.S. Cl. 62—373 **11 Claims**



1. An apparatus for storing and dispensing leafy vegetables, comprising:

a container having an aperture in a side wall;

a tray having a perforated surface, said tray being adapted to fit within said container;

means for supporting said tray within said container; and

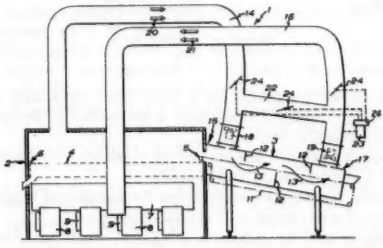
means for supporting leafy vegetables within said container below said tray, said means inclined towards the aperture in said container.

4,265,096

FREEZING PLANT FOR FOOD PRODUCTS

Gustaf A. Andersson, Viken, Sweden, assignor to Frigoscandia Contracting AB, Sweden

Filed Aug. 28, 1979, Ser. No. 70,468
Claims priority, application Sweden, Sep. 6, 1978, 7809386
Int. Cl.[3] F25D *25/04*
U.S. Cl. 62—380 **5 Claims**



1. An arrangement in a freezing unit for food products having a preferably low bulk weight and/or long holding time as compared with, for example, peas, said plant comprising in combination:

(a) a freezer having an infeed end, an outfeed end, and cooling elements between said infeed end and said outfeed end;

(b) a precool unit having an infeed end and an outfeed end, said precool unit being coupled at the outfeed end thereof to said freezer at the infeed end of said freezer;

(c) means for circulating air from said freezer to said precool unit and back to said freezer so that air returned to said freezer will be evenly spread over said cooling elements

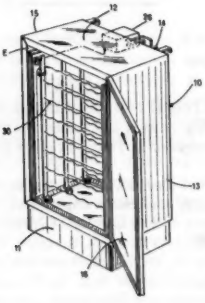
and whereby the amount of air in said freezing plant is maintained substantially constant without any reaction with ambient atmosphere wherein said air circulating means includes a first pipe connecting said freezer and said precool unit adjacent said outfeed end of said precool unit for cooling air to flow from said freezer to said precool unit and through said precool unit in a direction opposite to the feed direction of the product, and a second pipe connecting said precool unit to said freezer for air to return from said precool unit back to said freezer.

4,265,097

CLOSET FOR THE CONSERVATION OF WINE IN BOTTLES OR OTHER FOODSTUFFS

Robert Bordas, St. Jean de Maurienne; Paul Lacharmoise, Neuilly-sur-Seine, and Gilbert Moteruil, Plaisir, all of France

Filed Aug. 16, 1979, Ser. No. 67,002
Claims priority, application France, Aug. 16, 1978, 78 23835
Int. Cl.[3] F25D *11/04*
U.S. Cl. 62—438 **5 Claims**



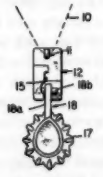
1. A closet for the conservation of foods such as wine in bottles, cheese or the like by maintaining said goods under conditions of constant high humidity and relatively low temperature above freezing comprising an insulated box having a top, a bottom, three vertical walls, and a door, a vat adapted to receive and retain water, the vat extending around the three verticle walls of the box and immediately adjacent thereto, and a refrigerative group comprising an evaporator, the evaporator being positioned within the vat so as to cool water therein, and the upper end of the vat presenting at least one opening to the interior of the box whereby moisture from the vat flows through said opening into the interior of the box for maintaining the desired constant high humidity therein.

4,265,098

DEVICE FOR CARRYING A REMOVABLE PENDANT

Kurt Wayne, White Plains, N.Y., assignor to Kurt Wayne, Inc., New York, N.Y.

Filed Jul. 9, 1979, Ser. No. 56,037
Int. Cl.[3] A44C *25/00*
U.S. Cl. 63—2 **13 Claims**



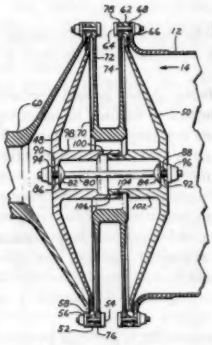
1. A device for carrying a removable pendant from a chain or necklace which comprises a member terminating in a curved portion and having an aperture extending from just below the top of said member to just beyond the point of curvature, said aperture having an enlargement at approximately the mid-point thereof and an aperture closure element attached to said member adapted to move from a position wherein said aperture is open to a position wherein that portion of said aperture from just below the top of said member to slightly below said enlargement is closed on one side, said element having a protuberance extending substantially at a right angle therefrom and positioned so that when said element is in the closed position, said protuberance extends through said aperture and seats against a surface of said member beyond said aperture.

4,265,099

FLEXIBLE COUPLING

Kenneth O. Johnson; Harold E. Fogg, both of Cincinnati, and Ned A. Hope, Loveland, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 2, 1979, Ser. No. 16,850
Int. Cl.[3] F16D *3/78*
U.S. Cl. 64—13 **4 Claims**



1. An improved drive shaft including a driving member and driven member, an improved flexible coupling for transmitting torque from the driving member to the driven member comprising:

a first diaphragm member which is connected to the driving member;

a second diaphragm member which is connected to the driven member; and

an annular flexible coupling member disposed axially between the diaphragm members, said coupling member including first and second radially extending discs, the first disc being connected to the first diaphragm member and the second disc being connected to the second diaphragm member, wherein the improvement comprises means for increasing the axial stiffness of the flexible coupling while maintaining alignment offset capability,

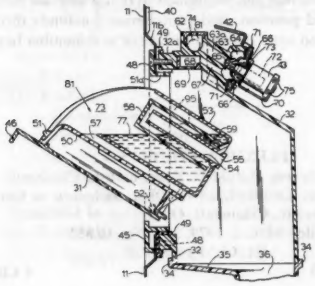
wherein the means is comprised of a tie-bolt extending through the radial center of each of the diaphragm members, said tie-bolt including a pair of bosses thereon to prevent the radial centers of the diaphragm members from axially converging and means for securing each axial end thereof to the diaphragm members in order to prevent the radial centers of the diaphragm members from axially diverging.

4,265,100

PIVOTAL SIPHON BLEACH DISPENSER FOR AUTOMATIC WASHER

Gerald L. Kretchman, St. Joseph; James R. Mulder, Berrien Township, Berrien County, and John W. Pielemeier, St. Joseph, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jan. 14, 1980, Ser. No. 111,714
Int. Cl.[3] D06F *39/02*
U.S. Cl. 68—12 R 9 Claims



8. In an automatic washer appliance having a treatment zone operable through a programmed sequence of washing, rinsing and drying steps,

additive dispensing means in said appliance comprising a container adapted to be filed to selective levels,

mounting means carrying said container for pivotal movement between a first receiving position and a second dispensing position, whereby the container may be charged with additive in said receiving position,

siphon means in said container for siphoning liquid out of said container and into a treatment zone in response to the liquid in the container reaching a specified level,

means for preventing said liquid from reaching said specified level when said container is in said first receiving position, and

water control means for selectively providing water to said container and operable in correlation with the programmed sequence,

whereby the container may be prefilled to a first selected level with additive and thereafter will be automatically filled to said specified level with water as a function of the programmed sequence of the machine whereupon the additive and water will be siphoned into the treatment zone.

4,265,101

BLOOD IDENTIFICATION MEANS

Harold Kaplan, 37 Oakland Beach Ave., Rye, N.Y. 10580

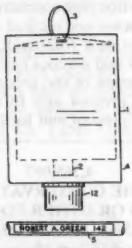
Filed Sep. 11, 1978, Ser. No. 941,657
Int. Cl.[3] E05B *25/00*
U.S. Cl. 70—57 6 Claims

1. Patient blood identification and supply means to insure the correct blood supply to a patient comprising:

a holder bag adapted to hold a bag of blood for a particular patient,

a coded lock mounted in the holder bag, the lock being coded for a particular patient, and

means attached to the patient providing the code for the lock, whereby application of said code in cooperative



viewing relation to the supply means will insure correct blood to be supplied to the patient.

4,265,102

METHOD FOR MOLDING A BULGE

Ryuji Shimakata, Atsugi, and Kazuyoshi Naito, Machida, both of Japan, assignors to Tokyo Press & Die Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1978, Ser. No. 971,259
Claims priority, application Japan, Dec. 27, 1977, 52-159247
Int. Cl.[3] B21D *26/02*
U.S. Cl. 72—58 5 Claims

1. A method for molding a bulge from a shaped blank having a neck portion and an entirely unoccupied interior comprising the steps of inserting a nozzle into the shaped blank through the neck portion to seal the neck portion to the nozzle, and jetting a pressure liquid from the nozzle into the entirely unoccupied interior of the shaped blank to cause air trapped in the shaped blank to be agitated into air bubbles to allow the liquid pressure to be applied to the inner surface of the shaped blank with a uniform distribution to mold a bulge, and controlling the pressure in the shaped blank by discharging, during molding, the liquid from within the blank through an interspace between the nozzle and neck portion by breaking the seal at the neck portion of the shaped blank.

4,265,103

RELATING TO COLD SHEET METAL ROLL FORMING APPARATUS

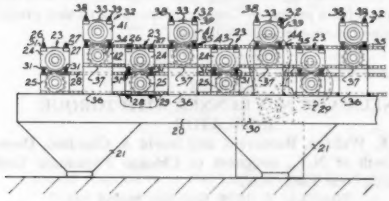
Jurgen Noack, 10 Winston Crescent, West Beach, South Australia, Australia

Filed Apr. 24, 1979, Ser. No. 32,889

Claims Priority, Application Australia, Apr. 21, 1978, PD 4144178, Apr. 28, 1978, PD4196/78

Int. Cl.[3] B21D *13/04*

U.S. Cl. 72—180 **2 Claims**



1. The cold sheet metal forming apparatus of a type in which a metal sheet is fed between in succession upper and lower complimentary shaped forming rollers so as to provide a shaped form in the metal sheet of constant cross section, each of the rollers being supported at each end by bearings so that each of the rollers rotates about an axis parallel with the axis of the other rollers and the apparatus including drive means to synchronously rotate about the said axis at least some of the rollers, the invention being characterized in that the rollers are supported by a common frame by adjustable support means in which the bearing housings at the common end of the roller pair are supported by a screw threaded rod at each side of each bearing housing, the end of each screw-threaded rod being secured to the supporting frame and nuts with screw threads complimentary to the screw thread of the respective rods being screwed onto the screw-threaded rods in such a way as to hold the respecting bearing housing firmly with respect to the frame;

further pairs of rollers positioned between at least some of the successively positioned roller pairs and located so that the forming gap is sufficiently high to enable a second forming line to be supported on the said common frame; and each roller pair having at each roller end by a separate bearing housing with the two housings at each end for each roller pair being held by the same two-threaded rods with one of the housings being vertically aligned above the other.

4,265,104

METHOD AND DEVICE FOR CUTTING A METAL STRIP SIMULTANEOUSLY INTO AT LEAST THREE CONTINUOUS COMB-SHAPED COMPONENTS

Giuseppe Todeschini, Olginate, Italy, assignor to Exfin, S.A., Lausanne, Switzerland

Filed Feb. 26, 1979, Ser. No. 16,129

Claims priority, application Italy, Mar. 13, 1978, 67543 A/78

Int. Cl.[3] B21D *28/08*

U.S. Cl. 72—330 **6 Claims**

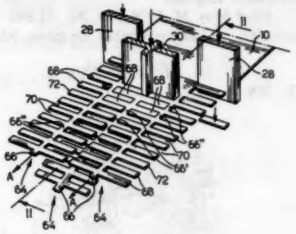
1. The method of cutting a strip of metal into at least three continuous comb-shaped components simultaneously, comprising the steps of:

(a) advancing the strip stepwise in a plane;

(b) cutting a parallel row of side notch arms in opposite edges of the strip each time it stops;

(c) cutting a continuous member from the central portion of the strip and forcing the member below the plane of the remainder of the strip; and

(d) cutting said continuous member from side arms parallel to said side notch arms and forcing the cut portion of said continuous member below the plane of said notch arms;



thereby to prevent the side arms of said continuous member from becoming entangled with said side components.

4,265,105

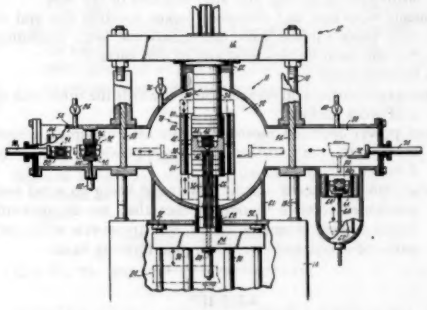
FORGING APPARATUS

Donald G. MacNitt, Jr., Singer Island, and Bryant H. Walker, Stuart, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 1, 1979, Ser. No. 90,184

Int. Cl.[3] B21K *1/32*

U.S. Cl. 72—354 **6 Claims**



1. A die package for forming a central disk structure and a plurality of integrally formed appendages extending therefrom, said die package comprising:

a stationary die of generally cylindrical geometry having an outer surface;

a movable die of generally cylindrical geometry having an outer surface;

a further movable die of generally cylindrical geometry contained within said movable die and slideable with respect thereto independently of the first movable die during the forming operation, both said movable dies being axially aligned with said stationary die and spaced apart therefrom; and

a cylindrical array of circumferentially adjacent die segments, each segment having

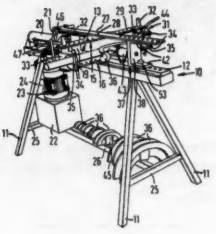
a pair of circumferential side walls in abutting relationship with the side walls of the adjacent segments and being contoured to form therewith a plurality of circumferentially spaced cavities of the inverse geometry of the appendages to be formed, and

an inner arcuate surface contacting the outer surfaces of said stationary and movable dies.

4,265,106
PIPE-BENDING APPARATUS

Tom McMaster, and Thomas Reid, both of 31 Movenis Hill, both of Garvagh, England

Filed May 24, 1979, Ser. No. 41,845
Claims priority, application United Kingdom, May 31, 1978, 24693/78
Int. Cl.³ B21D *7/03*
U.S. Cl. 72—389 **2 Claims**

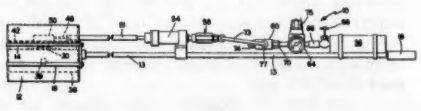


1. A pipe-bending apparatus comprising:
an elongated structure having a longitudinal work surface;
a clamping means comprising a pair of vertically-spaced transverse arms with a respective pipe-clamping device towards each opposite end thereof;
each clamp device including a pivotal support on both adjacent arm ends so as to be pivotal with respect thereto and also including means for detachably clamping a pipe to be bent so as to permit support of the pipe with respect to the arms before, during, and after bending of the pipe;
means mounting said clamping means towards one end of said work surface with said transverse arms extending beyond each longitudinal side of said surface;
a forming head;
means mounting said forming head towards the other end of said work surface;
and power-operated means to drive said clamping means along said work surface selectively towards and away from said forming head;
said clamping means and forming head being so sized and positioned relative to one another that, on an outward stroke of said clamping means, said transverse arms can pass one above and one below said forming head.

4,265,107
PORTABLE AIRBORNE DROPLET IMPACTOR SAMPLER AND METHOD

Lung Cheng, McMurray, and Warren G. Cross, Library, both of Pa., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Dec. 18, 1979, Ser. No. 104,922
Int. Cl.³ G01N *15/02*
U.S. Cl. 73—28 **16 Claims**

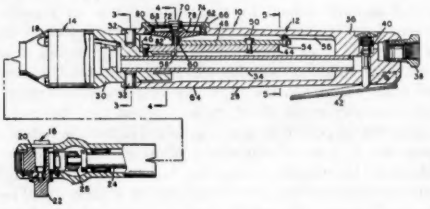


1. A drop impactor sampler, comprising:
a target having an upper surface which, when struck by a droplet, retains an impression corresponding to droplet size;
a stationary plate positioned adjacent said target and containing a first orifice through which said target is exposed to droplets to be sampled;
a movable plate parallel to said stationary plate and containing a second orifice;
means for moving said movable plate between first and second positions at a predetermined velocity; and
means for guiding said movable plate to maintain said first and second orifices along a common diametric axis between said first and second positions, said first and second orifices being non-overlapping with said movable plate located in said first position or said second position;
said movable plate and said stationary plate forming a shutter for selectively exposing said target to the external droplets for a period of time corresponding to said predetermined movable plate velocity.

4,265,108
PNEUMATIC NUT RUNNER WITH TORQUE INDICATOR

William K. Wallace, Barneveld, and David A. Giardino, Deerfield, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Apr. 2, 1979, Ser. No. 26,458
Int. Cl.³ B25B *23/145*
U.S. Cl. 73—862.21 **10 Claims**



1. In a torque read-out pneumatically powered hand-held tool for setting fasteners, said tool having in axial alignment a handle portion, a motor portion and a work engaging portion, an improvement comprising a torque read-out means including a rotatable torque indicating dial arranged on the handle portion, and a linkage means enclosed in the handle portion, one end of the linkage means arranged in operative engagement with the dial, the other end of the linkage means being arranged for movement responsive to change in axial alignment between the motor portion and the handle portion resulting from torque developed on a fastener by the tool at the work engaging portion whereby the dial is rotated to indicate said torque.

4,265,109
WRENCH WITH ANGULAR ROTATION READOUT

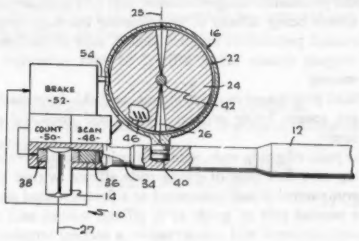
Hans-Dieter Hallbauer; Fritz G. H. Gast; Klaus-Werner Hoenow, and Armin Rahn, all of Hamburg, Fed. Rep. of Germany, assignors to C. Plath KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 869,403, Jan. 16, 1978, abandoned, which is a continuation of Ser. No. 733,294, Oct. 18, 1976, abandoned. This application Oct. 10, 1979, Ser. No. 83,730
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1975, 2547815
Int. Cl.³ B25B *23/14*
U.S. Cl. 73—862.23 **4 Claims**

1. A tool comprising:
tool means for applying a rotational force to a workpiece;
a housing mounted on the tool means;
an inertial body mounted for rotation in the housing, the body having a high moment of inertia with respect to the frictional moment of its mounting so that the angular orientation of the inertial body with respect to a fixed reference will not be substantially changed by rotation of the tool means about the axis of rotation of the workpiece;

brake means for selectively restricting rotation of the inertial body within the housing;

torque means for determining the torque applied by the tool means to the workpiece; and



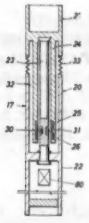
means responsive to the torque means for deactivating the brake means to allow rotation of the inertial body when the torque reaches a preselected value.

4,265,110

DOWNHOLE CABLE TENSION MEASURING APPARATUS

Pierre A. Moulin, Chaville, France, assignor to Schlumberger Technology Corp., Houston, Tex.

Filed Jun. 25, 1979, Ser. No. 51,472
Claims priority, application France, Jun. 30, 1978, 78 19585
Int. Cl.³ E21B *47/00*
U.S. Cl. 73—151 **9 Claims**



1. Apparatus for measuring the downhole tension applied to a cable suspending a well-logging apparatus in a borehole, comprising:

(a) an elongated sensitive element adapted to be connected between the cable and the well-logging apparatus to elongate elastically under the effect of the downhole tension;

(b) a reference element fixed to a first portion of said sensitive element and extending along said sensitive element to a second portion of said sensitive element;

(c) a fluid-filled body member adapted to receive said sensitive element and said reference element and compensation means on said body member to maintain the fluid at the pressure of the borehole; and

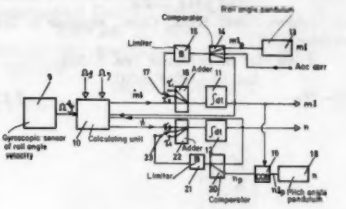
(d) detection means on said reference element and said sensitive element for detecting longitudinal displacements of said second portion of said sensitive element relative to said reference element under the effect of the downhole tension to generate an output signal representative of the downhole tension.

4,265,111

DEVICE FOR DETERMINING VERTICAL DIRECTION

Torbern Teiling, Lidingö, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 5, 1979, Ser. No. 9,568
Claims priority, application Sweden, Feb. 22, 1978, 7802038
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—178 R **8 Claims**



1. Apparatus for determining the vertical direction relative to a weapon system mounted on a moving base such as a craft, vehicle, aircraft, ship or the like, said apparatus comprising:

first gyroscopic means for measuring the angular velocity of said weapon system with respect to a first axis;

second gyroscopic means for measuring the angular velocity of said weapon system with respect to a second axis perpendicular to said first axis;

third gyroscopic means for measuring the roll angle velocity of said moving base;

means for determining an initial value of the vertical direction; and

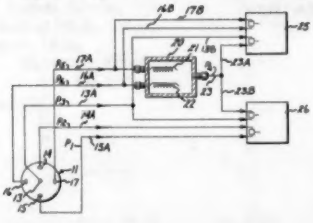
means for calculating from said initial value, said two angular velocities and said roll angle velocity the roll angle and pitch angle of said moving base, thereby determining the coordinates of said vertical direction.

4,265,112

PNEUMATIC AVERAGER

Richard V. De Leo, Hopkins, and Floyd W. Hagen, Eden Prairie, both of Minn., assignors to Rosemount Inc., Minneapolis, Minn.

Filed May 11, 1979, Ser. No. 38,208
Int. Cl.³ G01C *21/00*
U.S. Cl. 73—180 **8 Claims**



1. A gaseous fluid pressure averager apparatus including output fluid pressure carrying means for providing an output pressure signal having a pressure value substantially comprising the average of a plurality of pressure input signals from input fluid pressure carrying means without creating substantial cross flow between the input fluid pressure carrying means, said apparatus comprising separate fluid resistor fluid pressure transmitting means each having a resistance to fluid flow substantially greater than the resistance to fluid flow in the input fluid pressure carrying means, each of said fluid resistor fluid pressure transmitting means coupling one of the input fluid

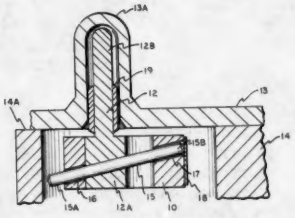
pressure carrying means to the output fluid pressure carrying means, the input fluid pressure carrying means and the output fluid pressure carrying means being connected only through a fluid flow path including the fluid resistor fluid pressure transmitter means.

4,265,113

SLIDING VALVE ASSEMBLY FOR USE IN GAS METERS OR THE LIKE

Howard H. Holmes, Sandy Hook, Conn., assignor to Textron, Inc., Providence, R.I.

Filed May 8, 1979, Ser. No. 37,094
Int. Cl.³ G01F *3/20*
U.S. Cl. 73—266 **7 Claims**



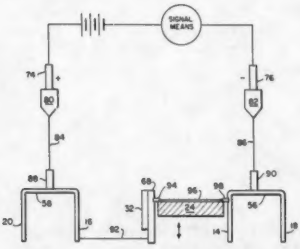
1. A multiple chamber gas meter having a casing including a gas inlet and a gas outlet, a plurality of measuring chambers disposed within said casing, a valve means including a valve seat having a plurality of port openings communicating with said measuring chambers, a rotary mounted valve disc for sequentially valving said port openings, and a drive means for imparting relative rotary movement between said valve disc and said valve seat, the improvement wherein said drive means comprises means for camming said valve disc in any relative rotational position of said valve disc so as to space said valve disc slightly from said valve seat in any position thereof whenever any retarding reactive force imparted to said rotating valve disc as a result of any tendency of said valve disc to stick to said valve seat in any position thereof.

4,265,114

LIQUID LEVEL INDICATOR FOR A RESERVOIR

Nicholas Anderson, 3234 Clifton Ave., Baltimore, Md. 21216

Filed Oct. 15, 1979, Ser. No. 84,612
Int. Cl.³ G01F *23/12*; G01R *33/00*; G01B *7/00*
U.S. Cl. 73—313 **8 Claims**



1. A liquid level indicator for a reservoir for liquids, comprising:

a housing means, said housing means having an open compartment exposed to liquid in a reservoir and an enclosed compartment not exposed to liquid in said reservoir, said housing means being suitably affixed to the inside surface of a wall of said reservoir;

a floating carriage means, said floating carriage means being retained within said open compartment and in contact with said liquid;

an indicator carriage means, said indicator carriage means being retained with said enclosed compartment and not exposed to said liquid;

a first permanent magnet means, said first permanent magnet means being affixed to said floating carriage means;

a second permanent magnet means, said second permanent magnet means being affixed to said indicator carriage means;

a third permanent magnet means, said third permanent magnet means being affixed within said enclosed compartment;

two pairs of guide rods, said two pairs of guide rods consisting of a first pair of guide rods affixed within said open compartment and connected to a first terminal means, and a second pair of guide rods affixed within said enclosed compartment and connected to a second terminal means, said floating carriage means being retained in said open compartment by being slidably mounted on said first pair of guide rods, said indicator carriage means being retained in said enclosed compartment by being slidably mounted on said second pair of guide rods;

a power source, said power source being external to said liquid level indicator and said reservoir;

a signal means, said signal means being external to said liquid level indicator and said reservoir, said signal means being gauge-like;

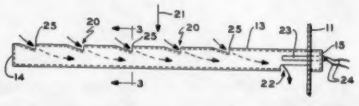
an electrical circuit means, said electrical circuit means being within said enclosed compartment, said electrical circuit means having connections on exterior of said enclosed compartment and extending to exterior of said reservoir and connected to said power source and to said signal means and additionally connected to said first and second terminal means, said electrical circuit means within said enclosed compartment having a rod-like element as an electrically connected part thereof affixed within the field of the magnetic lines of force of said third permanent magnet means.

4,265,115

AVERAGING TEMPERATURE RESPONSIVE APPARATUS

Leslie P. Stuhr, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 17, 1979, Ser. No. 39,712
Int. Cl.³ G01K *1/16*; G05D *23/24*
U.S. Cl. 73—349 **5 Claims**



1. In an averaging temperature responsive apparatus for use in air conditioning system to measure the average temperature of air passing through a duct comprising:

a hollow channel member adapted to be mounted across a duct substantially at right angles to the direction of air flow through the duct, said hollow channel member being supported at one end on a wall of the duct and having its ends closed,

a temperature responsive element mounted in one end of said channel member,

said channel member having a plurality of holes spaced the length of said member on one side thereof,

said channel member having an exhaust opening adjacent said temperature responsive element, said exhaust opening being on the opposite side of said member from said plurality of holes whereby a portion of the air passing through the duct flows into said plurality of holes, by said

element, and out said exhaust opening to provide a sample of air across the duct and thus the average temperature of the air in the duct, and

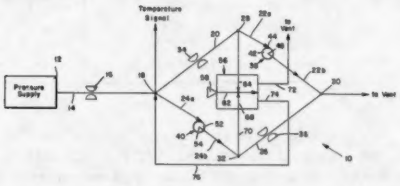
means comprising a portion of said channel member bent inward toward said one end of each of said plurality of holes for directing the flow of air as the air enters said one hole through said channel member toward said one end and said temperature responsive element.

4,265,116

FLUIDIC TEMPERATURE SENSOR

Paul S. Evans, Mesa, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 1, 1979, Ser. No. 80,902
Int. Cl.³ G01K *11/00*
U.S. Cl. 73—357 **17 Claims**



1. A fluidic temperature sensing system comprising:

a supply of pressurized fluid;

fluidic temperature sensing means having an input coupled to said supply of pressurized fluid;

means for sensing pressure variations in said supply of pressurized fluid; said pressure variation sensing means being coupled to said fluidic temperature sensing means; and

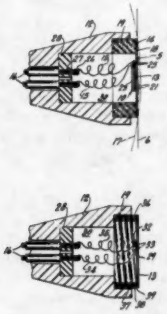
means for compensating for pressure variations in said supply of pressurized fluid, said compensating means being coupled between said input and said pressure variation sensing means.

4,265,117

SURFACE TEMPERATURE DETECTING APPARATUS

Paul E. Thoma, 208 Grove St., Burlington, Wis. 53105; Louis J. Crum, 6277 W. Port Ave., and Ronald J. Frias, 6282 W. Port Ave., both of Milwaukee, Wis. 53223

Filed Jan. 26, 1979, Ser. No. 6,864
Int. Cl.² G01K *7/04, 7/16*
U.S. Cl. 73—359 R **16 Claims**



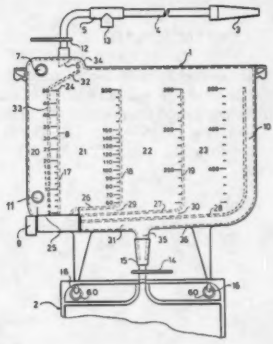
1. A temperature sensing apparatus for detecting the temperature of a surface, including a temperature sensitive sensor means having a support member with an extended surface engaging face means, said support member being a flexible member moveable into general conformance to the configuration of a surface to be detected, a support means for said support member, and an elastic means connected to the support member and to the support means and locating the support member spaced from the support means to allow elastic deflection of the support member relative to the support means.

4,265,118

URINE COLLECTING AND MEASURING INSTRUMENT

Karl-Heinz Griesel, Melsungen, Fed. Rep. of Germany, assignor to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Jul. 27, 1979, Ser. No. 61,257
Claims priority, application Fed. Rep. of Germany, Aug. 24, 1978, 7825225[U]
Int. Cl.³ G01F *19/00*
U.S. Cl. 73—427 **16 Claims**



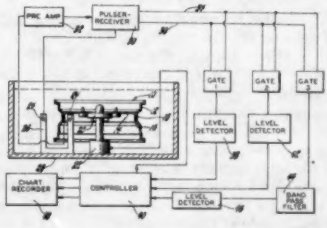
1. A urine measuring instrument for receiving, collecting and measuring urine from a catheterized patient comprising a transparent, graduated container with an upper inlet and a lower outlet to which a urine bag can be connected, said container being subdivided into several side-by-side vertical chambers into the first of which the inlet communicates, all the chambers being open to one another at the top and separated from one another at the bottom by a multi-path valve, all the chambers being in communication with the container outlet through said valve, and each chamber having a scale thereon.

4,265,119

ULTRASONIC METHOD OF INSPECTING SPOT WELDS

Martin W. Dubetz, Sterling Heights, and Umit Bilge, St. Clair Shores, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 30, 1979, Ser. No. 99,074
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—588 **3 Claims**



1. The method of ultrasonically measuring the size of a weld nugget contiguous to a surface bond region comprising the steps of

scanning a welded part with repetitive pulses of an ultra-

sonic beam having frequencies above 20 MHz and detecting the signal transmitted through the part,

analyzing the detected signal to determine the presence of a weld and

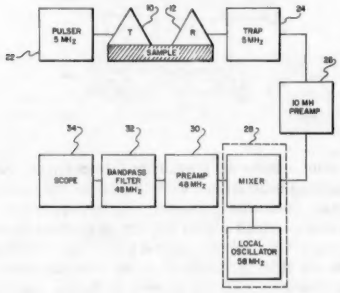
analyzing the detected signal where a weld is present to measure the nugget size by gating the signal to sample a signal portion which results from a plurality of reflections within the part, filtering the signal to pass only a band of frequencies above about 20 MHz, and determining the amount of high frequency energy in the signal portion wherein a high amount of high frequency energy correlates with a surface bond region and a low amount of high frequency energy correlates with a weld nugget region whereby the extent of the nugget traversed during each scan of a weld is determined.

4,265,120

FATIGUE DETECTION UTILIZING ACOUSTIC HARMONICS

Winfred L. Morris, Thousand Oaks; Richard V. Inman, Simi Valley, and Otto Buck, Thousand Oaks, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 23, 1979, Ser. No. 41,671
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—600 **12 Claims**



1. A nondestructive test method for inspecting an object, comprising the steps of:

(a) generating an acoustic wave at a first location on the object;

(b) detecting a harmonic of the generated wave at a second location on the object; and

(c) relating the characteristics of the detected wave to the surface cracks present in the object to provide an indication of the remaining useful life of the object.

4,265,121

HIGH RESOLUTION ULTRASOUND DIAGNOSTIC APPARATUS

Robert W. Cribbs, Placerville, Calif., assignor to Litton Industrial Products, Inc., Beverly Hills, Calif.

Filed Nov. 13, 1978, Ser. No. 959,565
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—607 **7 Claims**

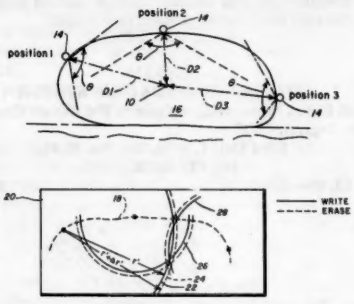
1. An imaging system for examining an area comprising:

transducer means for generating and transmitting pulses of wide frequency bandwidth energy into the examined area and for receiving echos reflected from an object in said area, said transducer means further having means for developing a first set of signals in response to return time and magnitude of the echos;

means for translating said transducer means along a scanning path in the vicinity of the examined area and for developing and recording a second set of signals in response to the position of said transducer means along the scanning path;

means on said transducer means for producing a beam of energy having an angle sufficiently large to impinge on said object from substantially all positions of the transducer means on the scanning path;

means for displaying multi grey level images on a display surface, the images having length and width dimensions



corresponding to length and width dimensions of object in the examining area and including a storage surface;

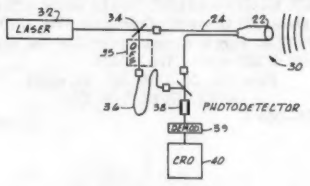
means for processing said first and said second set of signals and applying said processed signals to said displaying means.

4,265,122

NONDESTRUCTIVE TESTING APPARATUS AND METHOD UTILIZING TIME-DOMAIN RAMP SIGNALS

Billy D. Cook, and Eduardo Cavanagh, both of Houston, Tex., assignors to University of Houston, Houston, Tex.

Filed Apr. 23, 1979, Ser. No. 32,176
Int. Cl.³ G01N *29/04*; G02B *5/14*
U.S. Cl. 73—627 **21 Claims**



1. A nondestructive testing apparatus comprising:

a high frequency electrical pulse generator;

a first transducer for producing and detecting broadband pulses of ultrasonic energy including:

a support,

a second transducer located on said support, electrically connected to said generator, for generating an acoustic signal with a modulated ultrasonic carrier signal,

a nonlinear absorbing material disposed within said support and located adjacent to said first transducer for absorbing said carrier signal and parametrically generating a low frequency signal envelope having a waveform dependent upon said modulation, said low frequency signal envelope applied to a test structure for evaluation of defects,

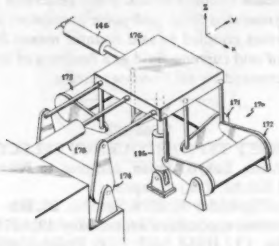
a nonresonant broadband receiver disposed on said support for receiving a reflected signal response from said structure; and

a display for viewing and evaluating said reflected response.

4,265,123
MOTION LIMITING APPARATUS

Klaus L. Cappel, Madison, Ala., assignor to Wyle Laboratories, El Segundo, Calif.

Filed Apr. 16, 1979, Ser. No. 30,163
Int. Cl.[3] G01N 29/04
U.S. Cl. 73—663 14 Claims



12. Apparatus for supporting a table (134, FIG. 3) and producing table movement comprising:

a vertical actuator (136) centered on said table to move it vertically;

a horizontal actuator (146) connected to said table to move it along a predetermined horizontal axis;

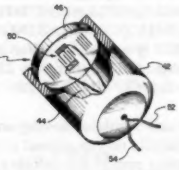
four largely horizontally-extending links (141, 142, 143, 144) extending primarily perpendicular to said predetermined horizontal axis, said links having outer ends pivotally connected to said table and having pivotally supported inner ends, said links arranged with a pair of links at opposite ends of said table and with the two links of each pair being vertically spaced, to permit horizontal table movement by said horizontal actuator while preventing rotation about a vertical axis and about said predetermined horizontal axis; and

a torque device (132) which includes a torque resistant member (137) rotatably mounted about an axis parallel to said predetermined axis and having a pair of links (139) with lower ends pivotally connected to the ends of said member and upper ends pivotally connected to said table.

4,265,124
REMOTE ACOUSTIC WAVE SENSORS

Teong C. Lim, and Edward J. Staples, both of Thousand Oaks, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 4, 1979, Ser. No. 45,506
Int. Cl.[3] G01L 9/00
U.S. Cl. 73—703 10 Claims



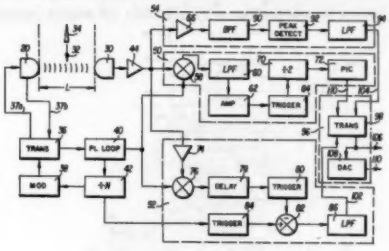
1. An acoustic wave sensor, comprising:

an acoustic wave oscillator having a resonant frequency which is modulated according to changes in a physical variable, including a Stoneley acoustic wave transducer and an amplifier coupled to said transducer in a feedback loop, the transducer thereby being adapted to modulate the resonant frequency of said loop; and a broadcast amplifier for directly transmitting said modulated frequency as a radio frequency signal.

4,265,125
FLOWMETER METHOD AND APPARATUS

Richard J. Mahany, 1341 Harold Dr., SE., Cedar Rapids, Iowa 52403

Filed Aug. 2, 1979, Ser. No. 63,007
Int. Cl.[3] G01F 1/32, 9/24, 29/00
U.S. Cl. 73—861.03 6 Claims



6. A fluid flowmeter comprising:

sonic signal transmitting means for directing a carrier sonic signal through a fluid stream;

sonic signal receiving means for receiving said sonic signal;

carrier modulation means connected to said sonic signal transmitting means for periodically frequency-shifting said carrier signal with respect to a reference average carrier frequency at a carrier modulation frequency so that a standing wave created by said sonic signal has an energy peak at said sonic signal receiving means;

means connected to said sonic signal receiving means for detecting an energy peak received at said receiving means, said energy peak representing the density of said fluid

a vortex strut mounted so that Karman vortices are created in the wake of the strut when there is relative movement between the strut and fluid in which the strut is immersed, said vortices modulating said transmitted sonic signal; and,

means for filtering from said peak energy a component caused by said vortices which modulate said sonic signal.

4,265,126
MEASUREMENT OF TRUE BLOOD VELOCITY BY AN ULTRASOUND SYSTEM

Emmanuel Papadofrangakis, Schenectady; William E. Engeler, Scotia, both of N.Y., and John A. Fakiris, Holly Hill, Fla., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 15, 1979, Ser. No. 48,711
Int. Cl.[3] G01F 1/66
U.S. Cl. 73—861.25 17 Claims

1. A steered beam ultrasound instrument for measuring two components of the flow velocity of blood and similar liquids comprising:

a linear transducer array for transmitting pulses of ultrasound with a preselected emission frequency and for generating received echo signals,

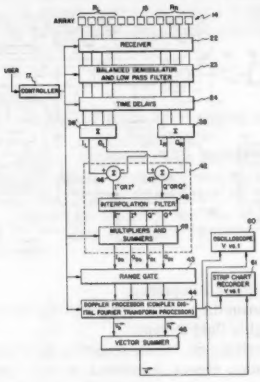
said array being comprised of a row of elements divisible into a transmitter sub-array and into left and right receiver sub-arrays that are variably located such that received center wave vectors through any observation point in the field of view subtend approximately equal angles with respect to a transmitter wave vector through the observation point,

means for exciting the elements of said transmitter sub-array to sequentially generate ultrasound pulses that propagate along a designated beam direction and insonify a sample

volume through which the true flow velocity vector is being determined,

left and right receiver means for coherently demodulating echo signals generated by the respective sub-arrays with phase quadrature emission frequency references and for producing left and right focused in-phase and quadrature signals,

computation means for deriving in-phase and quadrature Doppler signals for the beam direction and for the transverse direction realized by combining four signals representing the differences of the focused left and right in-phase and quadrature signals and the sums of the focused left and right in-phase and quadrature signals,



a range gate for extracting analog samples from said Doppler signals after every pulse transmission at a time corresponding to reception of echoes backscattered from the sample volume, and

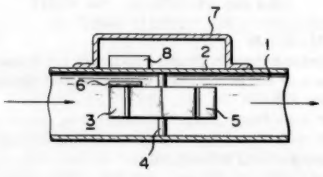
a Doppler processor for deriving from sets of said analog samples two components of flow velocity parallel to and transverse to the beam direction.

4,265,127

LOW METER SYSTEM PROVIDED WITH A PULSE GENERATOR

Hajime Onoda, Tokyo, Japan, assignor to Kimmon Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 1, 1979, Ser. No. 44,519
Claims priority, application Japan, Jun. 2, 1978, 53/75646[U]
Int. Cl.³ G01F *1/58*
U.S. Cl. 73—861.78 **9 Claims**



1. A flow meter comprising:

a movable member mounted in the flow of a running fluid so as to be moved as a function of said flow;

a composite wire which is formed of a core and shell having different coercive forces and mounted on the movable member, so as to move in a movement path the alignment direction of the respective magnetic domains of either of the core and shell of said composite wire being reversed when an external magnetic field is applied to said composite wire at a threshold level;

a pulse generator including a pair of permanent magnets arranged to face the movement path of the composite magnetic wire, a magnetic core positioned adjacent to one of the paired permanent magnets and a coil wound around the core;

counter means coupled to said pulse generator for counting pulses generated from said pulse generator; and

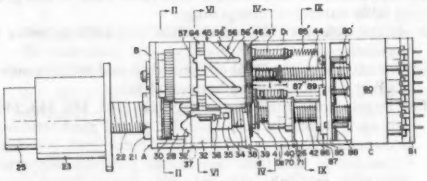
display means coupled to said counter means for indicating a flow of said running fluid as a function of the number of pulses counted by said counter means.

4,265,128

TURRET TYPE FREQUENCY SELECTOR

Hideki Ohshima, Tokyo, Japan, assignor to Nihon Technical Kabushiki Kaisha, Tokyo, Japan

Filed May 9, 1979, Ser. No. 37,291
Claims priority, application Japan, May 19, 1978, 53-59654
Int. Cl.³ H03J *5/02, 5/06;* F16H *27/02*
U.S. Cl. 74—10.15 **22 Claims**



1. Apparatus for selecting the position of a slide member, comprising a turret supported for rotation about an axis and having a plurality of circumferentially spaced position setting elements which project from an end of the turret toward the slide member, the slide member being supported for sliding movement toward and away from the position setting elements and being biased toward the position setting elements, the slide member having contact means adapted to engage a projecting end portion of a selected position setting element when that element is placed at a predetermined location by rotation of the turret, operating means for rotating the turret and concurrently moving the side member away from the position setting elements, and displacement means for movably supporting the contact means on the slide member to permit the contact means to move out of the way when struck by a position setting element as the turret is rotated and later to move into engagement with the end portion of the selected position setting element.

4,265,129

ORBITING MASS OSCILLATOR WITH OIL FILM CUSHIONED BEARINGS

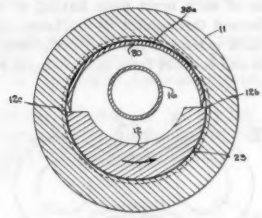
Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif. 91406

Filed Apr. 6, 1979, Ser. No. 27,935
Int. Cl.³ F16H *33/10*
U.S. Cl. 74—61 **4 Claims**

1. In an orbiting mass oscillator having an unbalanced arcuate rotor which is orbitally driven around a cylindrical housing for generating vibratory energy for delivery to a load wherein sharp jolting forces are developed, the improvement being means for providing cushioning between the rotor and the housing to dampen said forces comprising:

a supply of lubricating fluid to the bearing surfaces between the rotor and the housing, said rotor having a curving leading edge providing a wedge effect such that the rotor rides upon said fluid which forms a thick cushioning layer between the rotor and the housing, said rotor having a hollowed central portion and being in the form of first and second half cylinders, said first half cylinder forming an

unbalanced rotor mass, said second half cylinder comprising a hollowed shell portion located in opposite relationship to the first half cylinder, there being a greater clearance space between the outer wall of said second half



cylinder and the inner wall of the housing than between the outer wall of the first half cylinder and the inner wall of the housing, and

means for flowing said fluid around said bearing surfaces.

4,265,130

VIBRATION GENERATOR WITH ADJUSTABLE ECCENTRIC WEIGHT

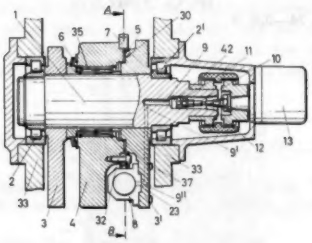
Gülertan Vural, Emmelshausen; Udo Carle, Höhr-Grenzhausen, and Manfred Lenkeit, Neuwied, all of Fed. Rep. of Germany, assignors to Koehring GmbH - Bomag Division, Boppard, Fed. Rep. of Germany

Filed Sep. 12, 1979, Ser. No. 75,004

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1978, 2840236; Oct. 2, 1978, 2842937

Int. Cl.³ B06B *1/16*

U.S. Cl. 74—87 **33 Claims**



1. A vibration generator comprising a driven excitation shaft, at least one first eccentric weight fixed to and rotatable with said shaft, a second eccentric weight which is also rotatable with said shaft while being adjustable relatively thereto, a gear ring on said second eccentric weight and concentric with the excitation shaft, and an adjusting pawl which is movable to-and-fro tangentially of said gear ring and which is mounted on said first eccentric weight and in engagement with the gear ring, said second eccentric weight being lockable in each adjusted position.

4,265,131

MACHINE TOOL TRANSFER BAR ACTUATOR UNIT

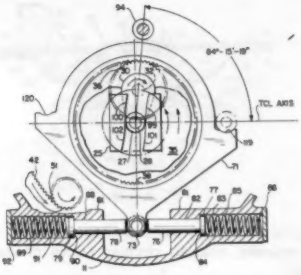
Robert R. Grover, Westport, N.H., assignor to Kingsbury Machine Tool Corporation, Keene, N.H.

Filed Jun. 28, 1978, Ser. No. 919,936

Int. Cl.³ F16H *27/02, 37/12*

U.S. Cl. 74—89.16 **31 Claims**

6. A mechanism for translating rotational motion to linear motion comprising a turret, means for rotating said turret about a first axis, a crankshaft, means mounting said crankshaft for rotation relative to said turret about a second axis generally parallel to but offset from said first axis, a crank arm carried by said crankshaft and being disposed in transverse relationship to said second axis, a driven element, means for guiding the driven element for movement along a generally linear path, said crank arm having a driving element for driving said driven element upon rotation of said turret, said driving element having a third axis generally parallel to but offset from said first and second axes, said driving element being moved upon the the rotation of said turret between first and second generally diametrically opposite positions relative to the arc of rotation of said turret, said first, second and third axes lying in common plane in the first and second positions of said driving element, means for absorbing the momentum of a load driven



by said driven element when said driving element is contiguous said first and second positions, said momentum absorbing means including a pair of cooperative abutment members, one of said abutment members being carried by said turret for movement thereby generally between said first and second positions, gear means meshingly interconnecting another of said abutment members and said crankshaft, said one abutment member being effective to contact and move said another abutment member upon said driving element moving contiguous said first and second positions, and means yielding against the movement of said another abutment member thereby absorbing the momentum transferred thereto from said turret through said meshed gear means.

4,265,132

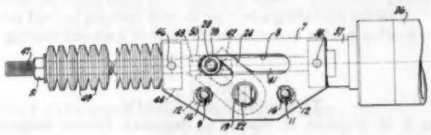
LINEAR-ROTARY TRANSLATOR

James R. Robertson, 1445 O'Hara Dr., Benicia, Calif. 94510

Filed Apr. 27, 1979, Ser. No. 34,202

Int. Cl.³ F01B *9/00*; F16H *21/44*

U.S. Cl. 74—104 **4 Claims**



1. A linear-rotary translator comprising a pair of parallel frame plates each having one of a pair of rectilinear slots therethrough, a pair of parallel bolts extending through said plates, bodies on said bolts having shoulders between and adapted to abut said plates, a drive shaft mounted for rotation in both of said plates about an axis parallel to said bolts, a pair of drive forks secured to said drive shaft and movable into abutment with said bodies, a drive pin movable in said slots and in said forks, a cylinder having an end body disposed between said frame plates, pivot pins parallel to said drive pin and engaging said end body and said frame plates for securing said cylinder to said frame plates against relative axial translation but for

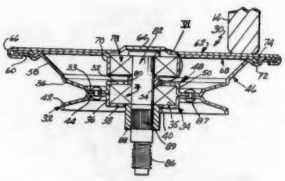
small relative rotation about said pivot pins, a drive rod reciprocable in said cylinder and extending between said frame plates, a block on said drive rod, and rollers on said block disposed in said pair of drive forks and in said rectilinear slots.

4,265,133

DRIVE DISC-PULLEY ASSEMBLY

Douglas J. Van Der Meulen, Shelbyville, and Siegfried K. Weis, Byron Center, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.

Filed Aug. 3, 1978, Ser. No. 930,520
Int. Cl.³ F16H *15/08, 55/44*
U.S. Cl. 74—194 **22 Claims**



1. A drive disc-pulley assembly comprising:
three separate, coaxial, circular pieces of stamped sheet metal;
first means on two of said pieces of sheet metal for forming a central bearing pocket having at least one axially extending central aperture therein, said bearing pocket being adapted to receive and retain at least one bearing;
flared means on said two pieces radially offset from said first means for forming an outwardly opening, V-belt receiving groove coaxial and axially aligned with said bearing pocket;
said two pieces of sheet metal secured together intermediate said V-belt groove and said bearing pocket;
a conical brace formed in one piece with and extending outwardly and away from said flared means on one of said two pieces;
said third piece being axially offset from said V-belt groove and including a radially extending, generally planar friction drive wheel engaging surface and having its outer periphery bent around, enclosing and clamping said outer edge of said conical brace such that in the region of said outer periphery, said drive wheel engaging surface is smooth and continuous, said drive wheel engaging surface having a diameter larger than the largest diameter of said V-belt groove and facing away from said V-belt groove; and
axially extending means adjacent said third piece of sheet metal for providing a bearing locator opening toward said bearing pocket and adapted to receive a second bearing.

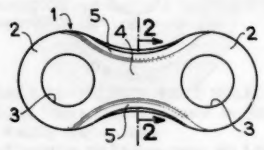
4,265,134

TRANSMISSION CHAIN

Guy J. M. Dupoyet, St. Simeon de Bressieux, France, assignor to Compagnie des Transmissions Mecaniques Sedis, Levallois Perret, France

Filed Jun. 30, 1978, Ser. No. 920,830
Claims priority, application France, Jul. 6, 1977, 77 20793
Int. Cl.² F16G *13/02*
U.S. Cl. 474—231 **14 Claims**

1. A transmission chain for cooperation with sprockets and comprising alternately outer links and inner links, each outer link comprising two outer plates and spacer members interconnecting the outer plates and each inner link comprising two generally parallel longitudinally extending laterally confronting and laterally spaced apart inner plates and tubular members rigid with the inner plates, the inner plates being trapped between the outer plates and the spacer members extending through the tubular members, each inner plate having two end portions, a center portion which interconnects said end portions and a peripheral edge which is curvilinear in the region of said end portions, said end portions respectively defining planar inner faces which are contained in a common plane, the center portion of each inner plate having at least one part which is deformed throughout its thickness and defines an inner face which extends from said peripheral edge in said center portion and is offset from said common plane laterally



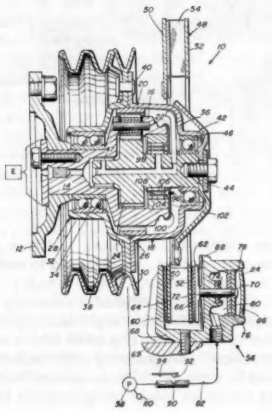
outwardly of the corresponding inner link, and the inner link having an outer face which is correspondingly offset laterally outwardly away from the tubular members in said at least one part of said center portion, whereby the lateral spacing between the inner faces defined by said deformed part of said inner portions is larger than the lateral spacing between the inner faces of said end portions which facilitates the engagement of teeth of the sprockets in the inner links, in particular when the chain is shifted by a derailleur.

4,265,135

AUTOMOTIVE ACCESSORY DRIVE

Richard L. Smirl, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 27, 1978, Ser. No. 964,218
Int. Cl.³ F16H *5/42*
U.S. Cl. 74—336 B **7 Claims**



1. In a drive system adapted to drive the accessories of a prime mover at a constant ratio predetermined speed, then at a substantially constant speed, comprising:
a planetary gear set having a sun gear, a ring gear and planet gears positioned on a planet carrier;
said ring gear adapted to drive said accessories at said constant ratio when said sun gear is held stationary;
a spring applied rotary brake adapted to hold said sun gear stationary;
a hydraulic drive adapted to progressively release said rotary brake in response to an increasing hydraulic pressure to permit controlled rotation of said sun gear;

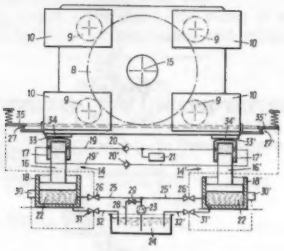
speed responsive means drivingly connected to said ring gear and adapted to generate a hydraulic pressure which increases with the speed of said ring gear.

4,265,136

TORQUE SUPPORT ARRANGEMENT

Ernst Riegler, Enns, and Manfred Schmidt, Linz, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 26, 1978, Ser. No. 973,146
Claims priority, application Austria, Jan. 10, 1978, 160/78
Int. Cl.³ F16H *35/00*; C21C *5/50*
U.S. Cl. 74—380 **11 Claims**



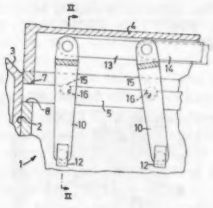
1. In a torque support arrangement for a gear, in particular for a converter drive, mounted so as to be movable about a pivot axis, and of the type including a base, a gear casing, and elastic supporting means provided for supporting said gear casing against said base on both sides of the pivot axis, the improvement which is characterized in that said elastic supporting means are designed as pressure-medium-piston-cylinder-means to which pressure gas is admitted, and that adjustment means are provided for adjusting the position of said pressure-medium-piston-cylinder-means relative to said base.

4,265,137

GEAR SELECTOR MECHANISM FOR A VEHICLE GEARBOX

Stig-Erik Johannesson, Kungälv, and Stanislaw J. Kruk, Västra Frölunda, both of Sweden, assignors to AB Volvo, Goteborg, Sweden

Filed Mar. 29, 1979, Ser. No. 25,454
Claims priority, application Sweden, Apr. 3, 1978, 7803713
Int. Cl.³ B60K *20/02*
U.S. Cl. 74—473 R **4 Claims**



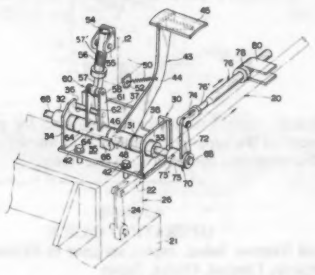
1. Gear selector mechanism for a vehicle gearbox, comprising axially displaceable shift rails and rocker forks joined to the shift rails, said rocker forks being swingable upon axial displacement of the shift rails to displace engaging sleeves in the coupling and synchronizing means of the gearbox, characterized in that a plurality of rocker forks are journalled in a common fork holder in the form of a pair of substantially parallel bars arranged at a distance from one another and oriented in the direction of the gearbox shaft.

4,265,138

EMERGENCY BRAKE APPARATUS FOR TRACK-TYPE VEHICLE

Takayuki Sato, Suarashi, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed May 31, 1979, Ser. No. 44,291
Claims priority, application Japan, Nov. 6, 1978, 53-152617[U]
Int. Cl.³ G05G *11/00*
U.S. Cl. 74—481 **6 Claims**



1. An auxiliary braking apparatus for a vehicle providing a second means of activating main braking systems which have a first rod (**20**) movement of which activates and deactivates the brakes, comprising:

a rotary member (**68**) axially fixed on said vehicle;

a brake member (**43**) rotatable about said rotary member (**68**);

means (**56,60**) for locking said brake member (**43**) in one of two operating positions, a totally activated position and a deactivated position, so as to be free from movement until an external force is applied, and so as to ensure that only total activation and total deactivation of said auxiliary braking apparatus can occur, with spring means (**57'**) for ensuring swift attainment of said activated position;

a second rod (**76**) connected to said brake member (**43**) such that movement of said brake member (**43**) to said activated position causes movement of said second rod (**76**); and,

means (**78,80**) interconnecting said second rod (**76**) and said first rod (**20**) such that movement of said brake member (**43**) to said activated position causes brake activating movement of said first rod (**20**).

4,265,139

TILT STEERING WHEEL AND SUPPORT COLUMN APPARATUS

Larry R. Logemann, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US 79/00319, § 371 Date May 14, 1981, § 102(e) Date May 14, 1981.
This PCT application filed May 14, 1979, Ser. No. 89,114
Int. Cl.³ B62D *1/18*
U.S. Cl. 74—485 **11 Claims**

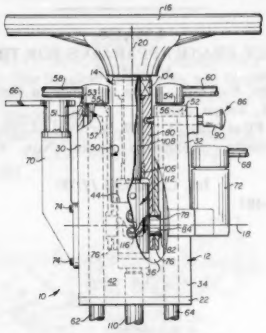
1. A tilt steering wheel and support column apparatus (**10**) comprising:

an upwardly inclined stationary support column (**12**) having an upwardly facing distal end surface (**54**);

an upwardly inclined steering wheel column (**14**) having a steering wheel (**16**);

means (**84,86**) for pivotally mounting the steering wheel

column (14) on the support column (12) and adjusting the tilt angle therebetween; and



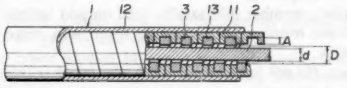
a vehicle control member (60) mounted for pivotal movement on the support column (12) at the distal end surface (54) subjacent the steering wheel (16).

4,265,140

OPERATING CABLE

Masashi Nagano, Sakai, Japan, assignor to Shimano Industrial Company, Limited, Osaka, Japan

Filed Jun. 11, 1979, Ser. No. 47,564
Claims priority, application Japan, Jun. 15, 1978, 53-83769
Int. Cl.³ F16C *1/10*
U.S. Cl. 139—501 R **5 Claims**



1. An operating cable comprising an outer tube which is made cylindrical by the winding operation of a band-shaped steel sheet in a spiral shape, and an inner wire which is inserted into the outer tube and is guided by the outer tube, said band-shaped steel sheet having a groove along its length direction, and a band-shaped liner to be engaged into the groove, said groove being open onto at least the inner side of when said band-shaped steel sheet has been wound, said liner being projected in the winding inward direction from the inner side face of said band-shaped steel sheet when the liner has been engaged into said groove, and the length between the open face, in said band-shaped steel sheet, of said groove and the groove bottom face opposite to said open face being greater than a distance represented by D-d, where d is the outer diameter of said inner wire, and D is the inner diameter of said liner in said outer tube.

4,265,141

MECHANICAL FORCE MULTIPLIER

Jeffrey M. Bowman, York, Pa., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

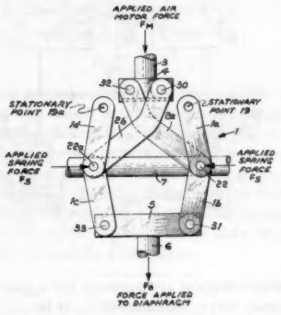
Continuation of Ser. No. 754,719, Dec. 27, 1976, abandoned.
This application Jul. 17, 1978, Ser. No. 925,008
Int. Cl.³ G05G *1/04;* F16K *31/44*
U.S. Cl. 74—516 **26 Claims**

1. A mechanical force multiplier comprising:

a first link unit having at least a first pair of links, each of said first pair of links having one end thereof pivotably coupled to and in a force transferring relationship with one of an actuator having an actuator force and a device to be actuated and a second pair of links each of said second pair of links having one end thereof pivotably connected to a stationary point distinct and spaced from both said actuator and said device to be actuated and the other end thereof pivotably connected to the other end of an associated one of said first pair of links;

a second link unit having at least a third pair of links, each of said third pair of links having one end thereof pivotably connected to said other end of an associated one of said first and second pair of links and the other end thereof pivotably coupled to and in a force transferring relationship with the other of said actuator and said device to be actuated;

said first, second and third pair of links defining a volume having a longitudinal dimension, each of said first and


APPLIED AIR MOTOR FORCE FM
STATIONARY POINT 9a
STATIONARY POINT 9b
APPLIED SPRING FORCE FS
APPLIED SPRING FORCE FS
FB FORCE APPLIED TO DIAPHRAGM

third pair of links having an angle therebetween on the inside of said volume that is less than 180° at all times; and

at least one spring in a force transferring relationship with at least one of said first and second link units, said spring being disposed outside of said volume with the force thereof being directed perpendicular to said longitudinal dimension from the outside of said volume toward the inside thereof;

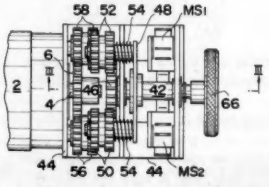
said first and second link units being disposed between said actuator and said device to be actuated, said first and second link units in cooperation with each other and said spring providing a relatively linearly increasing multiplied output force to said device to be actuated for activation thereof when said actuator is actuated.

4,265,142

MANUAL AND POWER MOTIVATED DRIVE MEANS

Yutaka Watanabe, Hon, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 28, 1978, Ser. No. 901,050
Claims priority, application Japan, May 10, 1977, 52/59911
Int. Cl.³ F16H *1/06;* G03B *23/12;* F16H *3/34*
U.S. Cl. 74—625 **10 Claims**



1. A manual and power motivated drive apparatus for manually driving an object, comprising:

a power driven output shaft drive coupled to a motor;

drive force receiving means mounted on said output shaft;

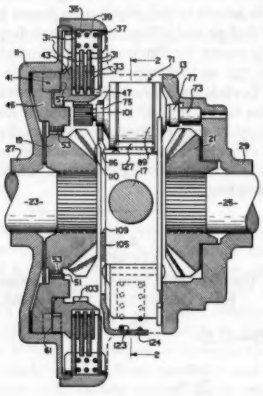
a manually rotatable input shaft;
first motion transmission means mounted on said input shaft;
intermediate second transmission means in engagement with said first motion transmission means and swingable about said input shaft in response to the rotation of said first motion transmission means;
biasing means urging said intermediate second transmission means about said input shaft, said second transmission means being spaced away from said drive force receiving means under the influence of said biasing means when said input shaft is stationary and drive engaging said drive force receiving means in response to said swinging of said second transmission means about said input shaft against the influence of said biasing means when said input shaft is rotated, whereby the driving force of said input shaft is transmitted to said output shaft; and
deactuating means responsive to the swing of said second transmission means for deactuating said motor.

4,265,143

LATCH MECHANISM FOR LOCKING DIFFERENTIAL

Edward J. Goscenski, Jr., Battle Creek, and Phillip E. Konkle, Albion, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 22, 1979, Ser. No. 22,662
Int. Cl.³ F16H *1/44, 1/40*
U.S. Cl. 74—710.5 **12 Claims**



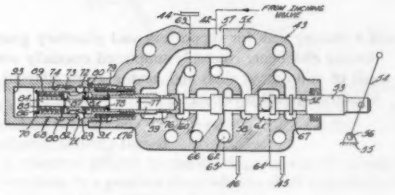
1. A differential gear mechanism comprising a gear case defining a gear chamber, a differential gear means disposed in said gear chamber, said differential gear means including at least one input gear and a pair of output gears defining an axis of rotation, lockup means for locking up said differential means to retard differentiating action, and actuating means for actuating said lockup means, said lockup means including clutch means operable between an engaged condition, effective to retard relative rotation between said gear case and said output gears, and a disengaged condition, said lockup means further including cam means operable to effect said engaged condition of said clutch means, said actuating means including retarding means operable to engage said cam means and retard rotation of a portion of said cam means, said retarding means comprising a flyweight mechanism rotatable about its axis at a speed generally proportional to the level of differentiating action and defining a stop surface movable from a retracted position to an extended position in response to an increase in the level of differentiating action, said actuating means further including a latch mechanism including a latch member and means biasing said latch member toward an operative position, said latch member, in said operative position being disposed to engage said stop surface, when said stop surface is in said extended position, said latch mechanism further including a weight oppositely disposed from said latch member, about said axis of rotation, said weight being operable to move said latch mechanism, in opposition to said biasing means, along a straight, generally diametrally-oriented path in response to increasing rotational speed of said differential gear mechanism, to move said latch member from said operative position to an inoperative position, above a predetermined rotational speed of said differential gear mechanism.

4,265,144

DETENT RELEASE FOR POWER SHIFT TRANSMISSION SELECTOR VALVE

Brian C. Clark, Brown Deer, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 26, 1978, Ser. No. 972,863
Int. Cl.³ F16H *47/00;* B60K *41/22;* F15B *15/04*
U.S. Cl. 74—752 C **14 Claims**



1. A detent mechanism in a hydraulic system comprising, a spool valve including a housing defining a cylindrical opening and having a plurality of annular grooves formed therein, a spool received in the cylindrical opening, a sleeve connected to said spool of said valve defining a plurality of radial openings for selective alignment with each of said annular grooves, a return spring means normally biasing said spool to a return position, a plurality of detent elements in said radial openings, camming means reciprocally mounted in said sleeve for selectively camming said detent elements into said annular grooves, a detent actuating means biasing said camming means and said detent elements radially outward in said openings in a selected one of said grooves, a detent release means biasing said camming means for release of said detent elements from said annular grooves, a load piston received in said sleeve defining a fluid pressure chamber and normally biasing said release means to a disengaging position with said camming means when said detent elements are engaged, said piston disengaging said release means permitting said release means to disengage said detent means responsive to a decrease in pressure in said fluid pressure chamber.

4,265,145

RING-PISTON METER WITH A PLANETARY-GEAR DIFFERENTIAL

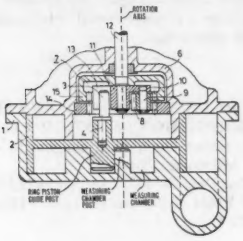
Eberhard Friebel, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 795,494, May 10, 1977, abandoned. This application May 29, 1979, Ser. No. 42,849
Claims priority, application Fed. Rep. of Germany, May 28, 1976, 7617502[U]
Int. Cl.³ F16H *1/28;* G01F *3/08*
U.S. Cl. 74—805 **1 Claim**

1. A ring piston meter comprising a ring piston and a planetary gear-differential coupling said ring piston to an output shaft, said ring piston having a driving pin arranged eccentrically with respect to the central axis thereof and being adapted to move about the axis of said output shaft, said planetary-gear differential including:
a stationary ring gear;
a further gear adapted to be connected to said output shaft,

said further gear having a number of teeth which differs from the number of teeth of said ring gear;

a planetary gear arranged to mesh with said ring gear and said further gear;



and a driving disk for supporting said planetary gear, said driving disk being rotatably supported coaxially with the axis of said output shaft and having a slot adapted to be engaged by said driving pin.

4,265,146

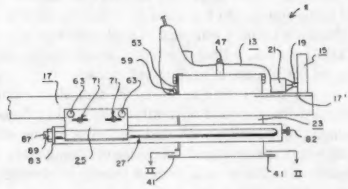
DEVICE FOR SHARPENING LAWN MOWER BLADES

Charles I. Horrell, Rte. 2, Hardy, Ark. 72542

Filed Apr. 2, 1979, Ser. No. 26,441

Int. Cl.³ B21K *19/00*

U.S. Cl. 76—82.1 **8 Claims**



1. A lawn mower blade sharpening device for use with a motor having an abrasive wheel attached thereto, said device comprising:

(a) clamp means for holding said lawn mower blade;

(b) attachment means for attaching said clamp means to said motor so as to allow said clamp means to be manually reciprocated back and forth substantially parallel to the longitudinal axis of said abrasive wheel with the cutting edge of said lawn mower blade in contact with said abrasive wheel, said attachment means including a rail means for being attached to said motor and a rail follower means for being attached to said clamp means and for reciprocating movement along said rail means, said rail means including a first leg for being slidably attached to said motor and including a second leg fixedly attached to said first leg for movement between an infinite number of positions along a plane substantially parallel to a horizontal plane passing through the longitudinal axis of said abrasive wheel; and

(c) lock means for selectively locking said second leg of said rail means in one of said infinite number of positions.

4,265,147

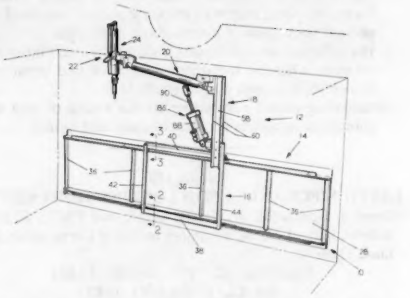
WORKING PIT WITH ARTICULATED TOOL ARM ASSEMBLY

Albert D. Fox, Novi, Mich., assignor to D. W. Zimmerman Mfg., Inc., Madison Heights, Mich.

Filed Nov. 5, 1979, Ser. No. 91,477

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—55 **18 Claims**



1. In combination, means forming a working pit along an automobile assembly line, supporting means extending longitudinally of said pit and affixed thereto, a trolley mounted on said supporting means for longitudinal movement toward the ends of the pit, an upright support mounted on said trolley and having a portion extending upwardly above said supporting means, arm means pivotally connected to said portion of said upright support, tool-holding means pivotally connected to an outer end of said arm means, and means carried by said upright support for counterbalancing the weight of said arm means and said tool-holding means.

4,265,148

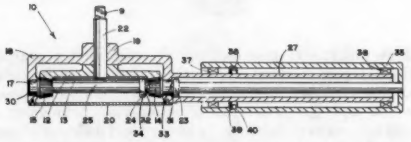
RATCHET TOOL

Rudolf E. Gartzke, 2326 Superior St., Madison, Wis. 53704

Filed Dec. 4, 1978, Ser. No. 966,110

Int. Cl.³ B25B *17/00*

U.S. Cl. 81—57.29 **5 Claims**



1. A ratchet tool comprising,

(a) a frame configured with a casing head portion and an elongated annular handle portion,

(b) a sleeve disposed substantially concentrically about said annular handle portion and mounted for rotational and axial biasing relative thereto,

(c) a shaft coaxial with said sleeve and affixed thereto extending axially through said handle portion,

(d) a tool head rotatably mounted within said casing head portion and provided with a gear portion having peripherally cut gear teeth,

(e) at least one pinion disposed about said shaft for engaging said gear teeth,

(f) a pair of overrunning couplers disposed with inner races thereof fixedly secured to said shaft and with outer races thereof fitted with means engaged alternately by axial biasing of said shaft and affixed sleeve, with at least said one pinion, thereby to enable said tool head to be operably

driven in either rotational direction selectively by said couplers being set to operably be engaged by rotation of said shaft, one in one position of axial biasing of said shaft and the other in the other position of axial biasing of said shaft, to drive at least one pinion and said tool head.

4,265,149

METHOD AND APPARATUS FOR TRUING RAILROAD WHEELS

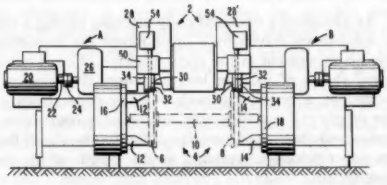
Helmut Wittkopp, and Bernhard Kunze, both of Erkelenz, Fed. Rep. of Germany, assignors to Firma W. Hegenscheidt Gesellschaft mbH, Erkelenz, Fed. Rep. of Germany

Division of Ser. No. 889,914, Mar. 24, 1978. This application Feb. 26, 1979, Ser. No. 14,957

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2713997

Int. Cl.³ B23B *5/28*

U.S. Cl. 82—8 **5 Claims**



1. An apparatus for truing the wheels of a set of railroad wheels which have a peripheral wheel surface including a rolling tread and a wheel flange, said apparatus comprising, means for mounting the wheels for rotation about an axis of rotation, machine frame means, common carriage means, means mounting said common carriage means on said machine frame means for movement relative to a mounted, rotating peripheral wheel surface in directions parallel to and normal to said axis of rotation, first cutting means fixedly mounted on said common carriage means in a position in which the first cutting means may be brought into cutting engagement with a mounted, rotating peripheral wheel surface by movement of the common carriage means, second cutting means operatively mounted on said common carriage means for movement in unison with the common carriage means and for movement on the common carriage means independently of the common carriage means between a first position in which the second cutting means may be brought into cutting engagement with a mounted, rotating peripheral wheel surface and a second position in which the second cutting means remains out of cutting engagement with any wheel surface, said second cutting means being further mounted and arranged on the common carriage means relative to the first cutting means so that in said first position said second cutting means extends from the common carriage means a first distance less than the first cutting means, and so that in said second position the second cutting means extends from the common carriage a second distance less than the first cutting means and less than said first distance, said apparatus further comprising drive means operatively connected to said second cutting means for selectively moving the second cutting means between said first and second positions independently of said first cutting means and independently of said common carriage means.

4,265,150

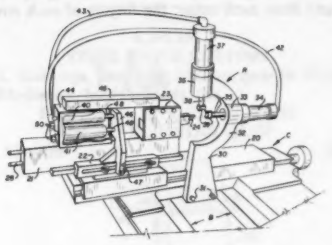
VARIABLE FOLLOWER REST FOR A LATHE

Billy R. Burford, Canon City, Colo., assignor to Portec, Inc., Oak Brook, Ill.

Filed Apr. 9, 1979, Ser. No. 28,553

Int. Cl.³ B23B *3/36, 25/00*

U.S. Cl. 82—17 **9 Claims**



1. In combination with a lathe having a carriage, a crossfeed and a cutting tool on the crossfeed, a variable follower rest mounted on the carriage for supporting a tapered shaft, or the like, when it is being turned, comprising:

(a) a standard affixed to the carriage to extend upwardly therefrom to a position alongside the shaft opposite to the position of the cutting tool;

(b) a shiftable bearing arm means mounted upon the standard adapted to engage the shaft and to hold the shaft against the pressure of the cutting tool as the shaft is being turned, including a generally horizontal bearing arm which is radially disposed with respect to, and directed towards, the shaft axis at the side opposite the crossfeed cutting tool;

(c) a shifting means adapted to shift the bearing arm means towards and away from the shaft axis responsive to, and in unison with, the movement of the crossfeed and its cutting tool towards and away from the shaft axis, including a master cylinder and a slave cylinder for said bearing arm means;

(d) an abutment means on the carriage;

(e) an abutment means on the crossfeed in alignment with the carriage abutment means with respect to crossfeed movement; and

(f) said master cylinder having a piston and a piston rod, with said master cylinder and its piston rod being disposed between the carriage abutment means and the crossfeed abutment means whereby to move said piston rod into and out of the master cylinder responsive to movements of the crossfeed upon the carriage and thereby pump fluid into and out of said slave cylinder.

4,265,151

APPARATUS FOR REMOVING LONG STRANDS FROM CHOPPED STRAND MATERIAL

Grant F. Carruth, Granville; Fred S. Coffey, Newark, both of Ohio, and Ray M. Fulmer, Aiken, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

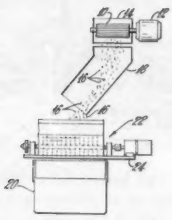
Filed Jul. 31, 1979, Ser. No. 62,379

Int. Cl.³ D01G *1/04*

U.S. Cl. 83—102 **2 Claims**

1. In glass strand chopping and collecting apparatus including a chopping apparatus (**10,12,14**), a collecting carton (**20**), and a chute (**18**) for receiving chopped glass strands (**16**) from the chopping apparatus and directing them into the carton, the improvement comprising apparatus (**22**) for removing strands longer than a desired chopped length, the long strand removing apparatus being disposed between the carton and the chute and comprising a base plate (**24**) having an aperture (**24***a*) therethrough, a casing formed principally of two half-covers (**38,40**) pivotally mounted on the base plate respectively on

opposite sides of the aperture and collectively providing an inlet throat (**44**) for receiving chopped glass strands from the chute for delivery through the aperture in the base plate into the carton, a pair of spaced parallel shafts (**27,28**) rotatably mounted on the base plate and extending through the casing over the aperture, each shaft having a plurality of rows of radially extending fingers (**36**) mounted thereon, the rows on each shaft extending axially thereof and being equally arcuately spaced from each other, the fingers of each row being



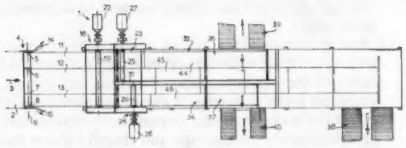
equally spaced from each other, and the fingers on one shaft being staggered from those on the other shaft axially of the shafts, and means (**30,31,32,34**) for rotatably driving the shafts in opposite directions whereby the fingers move upwardly in interleaving relationship between the shafts, strands longer than the desired chopped length are wrapped around one or the other of the shafts, and strands of the desired chopped length pass through the aperture generally on the outer sides of said shafts as distinct from between the shafts.

4,265,152

APPARATUS FOR LONGITUDINALLY AND TRANSVERSELY CUTTING STRIP MATERIAL

Gabriel Corradi, Soissons, France, assignor to Astin France Assistance Technique Industrielle, France

Filed Apr. 17, 1979, Ser. No. 30,815
Claims priority, application France, Feb. 5, 1979, 79 03791
Int. Cl.[3] B31B *1/16*
U.S. Cl. 83—106 **5 Claims**



1. A cutting machine for dividing a band of sheet material into a multiplicity of blanks comprising:

means for moving said band in a longitudinal direction,

longitudinal cutting means for dividing said band longitudinally into at least three strips comprising first and second side strips spaced from one another and an intermediate strip between said two side strips,

first and second transverse cutting devices disposed adjacent one another at a first level in position to cut said first and second side strips respectively transversely of their length, each of said first and second cutting devices having a cutting width less than the width of said band, the combined cutting width of said first and second cutting devices being at least approximately equal to the width of said band,

a third transverse cutting device disposed at a second level and having a cutting width at least equal to the width of said band, and

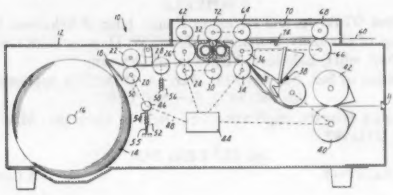
means for directing said first and second side strips to said first and second transverse cutting devices respectively at said first level and for directing said intermediate strip to said third transverse cutting devices at said second level, whereby said strips are independently cut transversely into a multiplicity of blanks of predetermined sizes.

4,265,153

COPY MACHINE WITH AUTOMATIC ROLL SUPPLIED COPY PAPER FEEDING AND CUTTING APPARATUS AND CONTROL CIRCUITRY

Lawrence D. Price, Jr., Minnetonka, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 4, 1980, Ser. No. 118,198
Int. Cl.[3] B26D *5/38*
U.S. Cl. 83—372 **3 Claims**



1. An electrically operated copy machine having a transferring mechanism driven by a drive motor for providing synchronous movement in the copy machine of copy paper and original sheets of varying lengths where the copy paper is provided by a continuous web of copy paper from a copy paper supply roll and apparatus and circuitry responsive to the presence and absence of the original for cutting sheets from the copy paper which correspond to the length of the original including:

first and second copy paper feed rollers included in the transferring mechanism, said first feed roller positioned between the copy paper supply roll and said second feed roller;

first and second solenoids, each having a winding;

a capacitor having one side connected to one end of each of said windings;

a D.C. power supply having one side connected to the other end of said second solenoid winding;

a cutter positioned in the path of travel of the copy paper between said first and second feed rollers and operatively connected to said first solenoid;

switch means positioned along the path of travel for an original sheet presenting a first position and a second position in response to the absence and presence, respectively, of an original sheet presented to the copy machine at said switch means, said switch means operatively connected to said other end of said first solenoids, the other side of said capacitor and the other side of said D.C. supply voltage forming a first circuit loop including said first solenoid winding and said capacitor when said switch means is presenting said first position and forming a second circuit loop including said D.C. supply source, said capacitor and said second solenoid winding when said switch means is presenting said second position, said second circuit loop when formed causing said capacitor to be charged and causing said second solenoid winding to be energized while said capacitor is being charged and said first circuit loop when formed subsequent to the formation of said second circuit loop causing said first solenoid winding to be energized by the discharge of said capacitor; and

a clutch adapted for control by said second solenoid and operatively engaged between the drive motor and said first feed roller for providing sufficient rotation of said first feed roller to move the copy paper from said cutter to

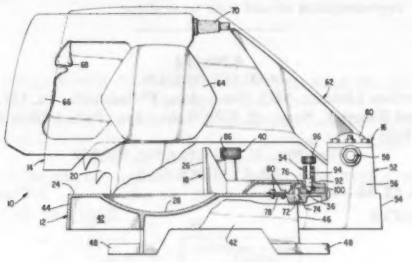
said second feed roller following energization of said second solenoid.

4,265,154

MOTORIZED MITER SAW FENCE MOUNTING

William A. Batson, Pickens, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 15, 1979, Ser. No. 84,493
Int. Cl.[3] B27B *5/20*
U.S. Cl. 83—468 8 Claims



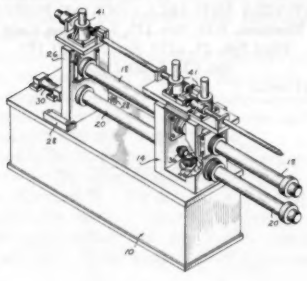
1. Miter saw comprising a cast base structure having a generally planar work support surface to which a motor powered circular chop saw is pivotally mounted for rotation about about an axis generally parallel said work support surface and a work piece positioning fence pivotally carried by said base support structure for rotation about an axis generally perpendicular both said surface and said first mentioned axis, together with means for guiding and restraining said fence for pivotal movement about said second mentioned axis, said guiding and restraining means comprising a pair of pins pressed into said work support surface projecting generally normally upwardly thereof and a cooperating generally circularly arcuate generally downwardly open groove in the under surface of said fence.

4,265,155

SLITTER HAVING PIVOTAL MULTIPLE SPACED PAIRS OF ARBORS

Esteban Lopez, Chicago, and Douglas Matsunaga, Vernon Hills, both of, Il., assignors to Braner Enterprises, Inc., Schiller Park, Ill.

Filed Feb. 26, 1979, Ser. No. 16,126
Int. Cl.[3] B23D *19/06;* B26D *1/24*
U.S. Cl. 83—479 4 Claims



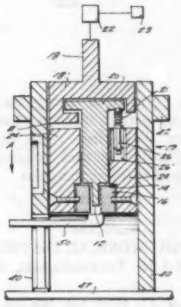
1. In a slitter having multiple spaced pairs of arbors, a frame, a support carried upon said frame, means mounting said support for rotation relative to said frame, said pairs of arbors journaled at one end to said support, a bearing housing spaced from said support and carried by said frame, each pair of arbors being alignable with said bearing housing upon pivotal movement of said support, said bearing housing being shiftable toward and away from said support, the other end of each pair of arbors being journaled within said bearing housing when said arbors are aligned with said bearing housing and the bearing housing shifted toward said support, the improvement comprising drive means at said support for rotating at least one of the arbors of each pair of arbors when journaled in said bearing housing.

4,265,156

STEEL STOCK CUTTING

James H. Stubbings, Rockville, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Filed Jul. 31, 1979, Ser. No. 62,552
Int. Cl.[3] B23D *15/04, 23/00*
U.S. Cl. 83—530 20 Claims



1. A shearing assembly comprising a female die;

a male die including a cutting blade having a pair of said faces; and

means associated with said cutting blade for preventing rolling of edges of material being sheared, said means comprising a pair of shelf members, one associated with each of said cutting blade side faces, for engaging the edges of material being sheared, each shelf member comprising a pair of substantially straight, planar surfaces, converging to form a point pointing to a direction in which the male die is moved during shearing.

4,265,157

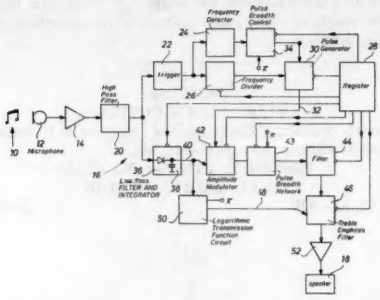
SYNTHETIC PRODUCTION OF SOUNDS

Jobst Fricke; Wolfgang Voigt, and Jürgen Schmitz, all of Cologne, Fed. Rep. of Germany, assignors to Colonia Management-und Beratungsgesellschaft mbH & Co., K.G., Fed. Rep. of Germany

Continuation of Ser. No. 674,830, Apr. 7, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 924,726
Claims priority, application Switzerland, Apr. 8, 1975, 4411/75
Int. Cl.[3] G10H *1/02*
U.S. Cl. 84—1.19 28 Claims

1. A method for the electronic production of sounds from a sequence of periodic electrical pulse signals, the sounds to be produced having an adjustable pitch and a predetermined timbre, which is determined by an amplitude/frequency function determined by the pulses, the frequency function having a formant character and, above a fundamental frequency corresponding to the pitch of the sounds to be produced from the sequence, at least one amplitude minimum, the cycle duration of the sequence being the reciprocal of the pitch, comprising the steps of: maintaining, for cycles having only one pulse and pulse pause, the duration of each of one of the pulse and pulse pause of each of such cycles of the sequence constant for all pitches within a predetermined pitch range, which includes at

least one fifth; for cycles having more than one pulse and pulse pause which form respectively a pulse distribution pattern and a pulse pause distribution pattern for each of such cycles, maintaining the duration of each pulse within the pulse distribution pattern or the duration of each pulse pause within the pulse pause distribution pattern of each of such cycles of the sequence constant for all pitches within the predetermined pitch range; and transducing said sequence into sounds, wherein the pulse shape is not rectangular.



4,265,158

ELECTRONIC MUSICAL INSTRUMENT

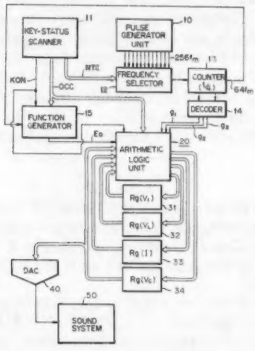
Shuichi Takahashi, 1-1-16, Takaidohigashi, Suginami-ku, Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,503

Claims priority, application Japan, Feb. 9, 1979, 54-13293; Mar. 15, 1979, 54-29431; Mar. 20, 1979, 54-31723

Int. Cl.[3] G10H *1/12, 5/00*

U.S. Cl. 84—1.22 **15 Claims**



1. An electronic musical instrument comprising:

a key-status scanner means which scans the contacts of all of the key-switches on an instrument keyboard, said key-status scanner means transmitting an octave code representing the octave number corresponding to a closed contact, a note code representing one of the twelve notes corresponding to said closed contact, and a key-on signal indicating the duration of the closed state of said closed contact;

a frequency selector means controlled by said note code for generating a clock pulse train having a pulse repetition period specified by said note code;

a function generator means which receives said clock pulse train, said octave code and said key-on signal to produce a digital representation of a periodic time function for a duration determined by said key-on signal, the repetition period of said periodic time function being equal to an integral multiple of said pulse repetition period of said clock pulse train, the value of said integral multiple being determined by said octave code;

an elementary digital filter which receives said digital representation of said periodic time function, said octave code and said key-on signal for producing a digital representation of a tone waveshape, said elementary digital filter including an arithmetic logic unit for simulating a voltage and a current in an elementary analog filter; and

output means for producing a musical note from the digital representation of said tone waveshape.

4,265,159

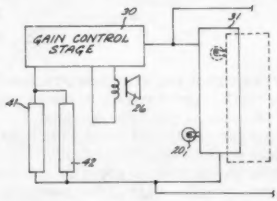
COLOR ORGAN

Theodore Liebman, 8201 Henry Ave., Philadelphia, Pa. 19128, and Robert V. Nemiroff, 9728 Walley Ave., Philadelphia, Pa. 19115

Filed Nov. 13, 1978, Ser. No. 959,889

Int. Cl.[3] G08B *5/38*

U.S. Cl. 84—464 R **6 Claims**



1. In a color organ having a plurality of lights mounted in an enclosure, said enclosure including a color mask mounted over said lights, the improvement comprising:

an audio responsive switching circuit connected in circuit with said lights including a sound responsive pick up connected to a gain control stage said gain control stage including a first circuit branch rendered effective during increases in said sound and a second circuit branch rendered effective during decreases in said sound, said first and second branches having different response rates and threshold means at the output of said gain control means connected to said lights for exciting said lights when said gain control means produces an output signal above a predetermined threshold.

4,265,160

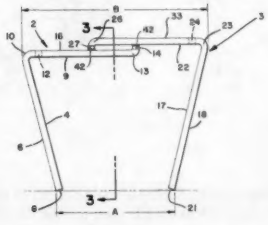
COMPOSITE STAPLE-TYPE FASTENER HAVING RELATIVELY MOVABLE LOCKING PORTIONS

Renato G. Martinez, P.O. Box 177, Los Altos, Calif. 94022

Filed Feb. 27, 1978, Ser. No. 881,187

Int. Cl.[3] F16B *15/00*

U.S. Cl. 411—442 **8 Claims**



1. A composite staple-like drivable fastener comprising first and second parts adapted to be driven simultaneously and each including a leg portion converging toward the other leg por-

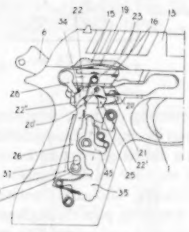
tion and mutually reaching web portions arranged in partially overlapping engagement and adapted while so engaged to simultaneously move relative to one another into further overlapping engagement when the fastener is driven, and means retaining said first and second staple parts in partially overlapping engagement prior to being driven and adapted to release said staple parts for said relative movement when said staple parts are driven.

4,265,161

MEANS FOR CONTROLLING RAPID-FIRE IN AN AUTOMATIC WEAPON

Pier C. Beretta, Gardone Val Trompia, Italy, assignor to Fabbrica D'Armi Pietro Beretta S.p.A., Gardone V.T., Italy

Filed Feb. 7, 1979, Ser. No. 10,144
Claims priority, application Italy, Feb. 7, 1978, 5122 A/78
Int. Cl.[3] F41D *11/10*
U.S. Cl. 89—129 B **8 Claims**



1. In an automatic weapon which includes a trigger; a hammer for angular displacements toward and away from a firing pin; a pair of arming teeth on the hammer and angularly spaced from each other; a trip lever associated with one of the arming teeth on the hammer and capable of angular displacements; an arming pull-rod attached to the trigger and acting on the trip lever for disengaging the hammer; a rapid-fire lever associated with the other arming tooth on the hammer during rapid-firing; and a striker carriage having first and second cam surfaces engaging the lever and the arming pull-rod during the recoiling and closing movements of the carriage striker, improved means for controlling rapid-fire conmprising:

(a) a transfer lever for transferring the movement of the striker carriage to the arming pull-rod for angularly displacing the arming pull-rod to engage and disengage the trip lever of the hammer;

(b) fire selector means for controlled rapid-fire action, said fire selector means being angularly displaceable;

(c) a disengager rocker lever arm pivotably associated with said transfer lever and movable into active and inactive positions with said first selector means;

(d) a counting tooth integral with said disengager rocker lever arm for counting the sequentially fired shots;

(e) a rapid-fire control rod attached to the arming pull-rod and guided for vertical, linear movements by action of said disengager rocker lever arm, and for angular movements as a result of the displacements of the arming pull rod;

(f) a first group of teeth in said rapid-fire control rod engaging said counting tooth; and

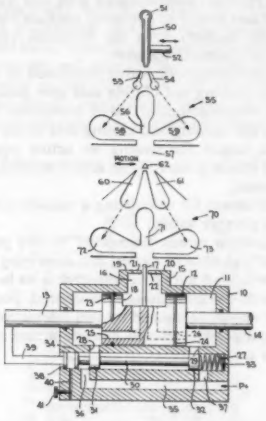
(g) a second group of teeth in said rapid-fire control rod associated with an arrest lever associated with said rapid-fire control rod, the number of teeth in said second group corresponding to the number of shots to be fired sequentially.

4,265,162

SERVOVALVE HAVING FLUIDIC ACTUATOR

Vincent F. Neradka, 13806 Drake Dr., Rockville, Md. 20853, and Francis M. Manion, 1705 Evelyn Dr., Rockville, Md. 20852

Filed May 25, 1979, Ser. No. 42,292
Int. Cl.[3] F01B *25/02;* F15B *15/22*
U.S. Cl. 91—3 **13 Claims**



1. A servo actuator of the type wherein a first body member is moved in a chamber in response to a command signal, said servo actuator being characterized by:

first and second fluid inlets into said chamber for receiving said fluid directed thereto differentially;

a fluidic driver amplifier for providing said command signal in the form of a fluid jet which is deflected relative to said first and second inlets in proportion to the amplitude of said command signal;

means for moving said first body member in one direction in said chamber in response to the fluid flow received at said first inlet being greater than the fluid flow received at said second inlet, and for moving said first body in an opposite direction in said chamber in response to the fluid flow received at said second inlet being greater than the fluid flow received at said first inlet; and

flow splitter means secured to and movable with said first body member and disposed directly in the path of said fluid jet for increasing the jet flow into said second inlet in proportion to displacement of said first body member in said one direction in said chamber, and for increasing the jet flow into said first inlet in proportion to displacement of said first body member in said opposite direction in said chamber.

4,265,163

FUEL CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Umeo Arao, Okazaki; Tsuneyuki Egami, Aichi; Tooru Kosuda, and Yasuhiro Takeuch[1], both of Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jul. 31, 1979, Ser. No. 62,554
Claims priority, application Japan, Aug. 10, 1978, 53-97873
Int. Cl.[3] F15B *13/16*
U.S. Cl. 91—361 **4 Claims**

1. A system for controlling the position of plunger means comprising:

a source of hydraulic medium;

a pump for pressurizing the hydraulic medium;

a housing having a closed end;

plunger means slidably fitted inside said housing, said

plunger means forming with said housing a hydraulic chamber;

biasing means for biasing said plunger means axially;

an inlet passage communicated with said pump and said hydraulic chamber for delivering the pressurized hydraulic medium from the pump to the hydraulic chamber to thereby bias said plunger means against said biasing means;

an outlet passage communicated with said hydraulic chamber and said source of hydraulic medium for returning the hydraulic medium from the hydraulic chamber to the source of hydraulic medium;

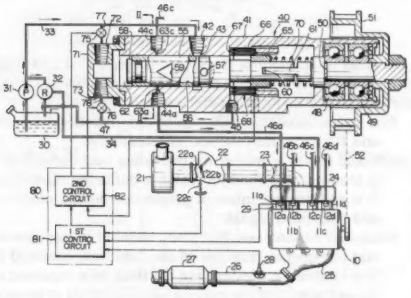
an inlet electromagnetic valve positioned in said inlet passage for opening and closing said inlet passage;

an outlet electromagnetic valve positioned in said outlet passage for opening and closing said outlet passage;

a position sensor for sensing an actual position of said plunger means generating an actual position signal indicative thereof;

calculation means for calculating a variable desired position for said plunger means;

first comparison means, connected to said position sensor and said calculation means, for determing whether the pressure in said hydraulic chamber is to be increased or decreased, by comparing the desired position of said plunger means, calculated by said calculation means, with the actual position of said plunger means sensed by said position sensor;



difference calculating means connected to said position sensor and said calculation means, for calculating a difference between the sensed actual position and the desired position;

second comparison means, connected to said difference calculating means, for comparing the calculated difference with a predetermined value; and

valve control means, connected to said first and second comparison means and said inlet and outlet electromagnetic valves, for electrically controlling the openings and closing of said inlet and outlet electromagnetic valves,

said valve control means determining, in response to a comparison result of said second comparison means indicating that said calculated difference is larger than the predetermined value, (a) that one of said inlet and outlet electromagnetic valves is to be opened continuously, while (b) the other thereof is to be closed continuously, and in response to a comparison result of said first comparison means, to which electromagnetic valve is to be opened, and

said valve control means, in response to a comparison result of said second comparison means indicating that said calculated difference is smaller than the predetermined value, determining (a) that one of said inlet and outlet electromagnetic valves is to be opened intermittently with pulses of a first predetermined width, while (b) the other thereof is to be closed intermittently with pulses of a second predetermined width which is different from said first predetermined width, and in response to the comparison result of said first comparison means to which electromagnetic valve the pulses of the first predetermined width is to be applied.

4,265,164

PRESSURE DETECTING DEVICE

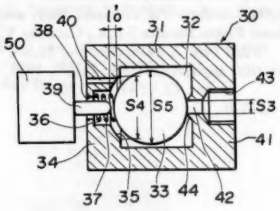
Eizo Maeda, Tokyo, and Hiromichi Iizuka, Yokosuka, both of Japan, assignors to Kabushiki Kaisha ASAHI Enterprise, Kanda, Japan

Filed Apr. 23, 1979, Ser. No. 32,458

Claims priority, application Japan, Apr. 24, 1978, 53/48468; Jan. 16, 1979, 54/3609[U]

Int. Cl.[3] F15B *15/17*

U.S. Cl. 91—417 R **11 Claims**



1. A pressure detecting device comprising a housing with a pair of side walls and having a pressure detecting port at one of the side walls and a discharge port at the other side thereof, a pressure receiving member axially displaceable disposed in an axial bore in said housing, said axial bore being communicated with the pressure detecting port through said one side wall of the housing, an actuating rod secured to said pressure receiving member and displaceably extended through the other side wall of the housing and a coil spring which is energized to displace the pressure receiving member toward the pressure detecting port, wherein seal is provided between the side wall of the housing at the pressure detecting port side and the pressure receiving member as well as between the other side wall of the housing at the discharge port side and the pressure receiving member and further sealing area at the discharge port side is larger than that at the pressure detecting port side.

4,265,165

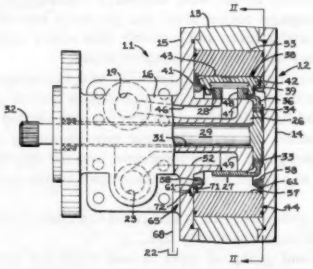
RADIAL PISTON FLUID TRANSLATING DEVICE WITH POWER CONSERVING SCAVENGING MEANS

William K. Engel, Peoria, and Dean E. Miller, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 27, 1979, Ser. No. 90,153

Int. Cl.[3] F01B *13/06*

U.S. Cl. 91—490 **11 Claims**



1. In a radial piston fluid translating device (**11**, **11*a***, **11*b***) having a rotor (**27**), a plurality of fluid translating elements (**38**)

carried thereon, race means (44) for forcing radial reciprocation of said elements (38) as said rotor (27) turns and which defines an annular chamber (57) in which said elements (38) orbit and wherein centrifugal force forms accumulated fluid into a rotating annular volume during rotation of said rotor (27) and wherein different portions of said rotating annular volume of fluid exhibit different pressures, the device having a fluid drain path (68, 68*a*, 68*b*) adapted to discharge fluid accumulated in said chamber (57), the improvement comprising:

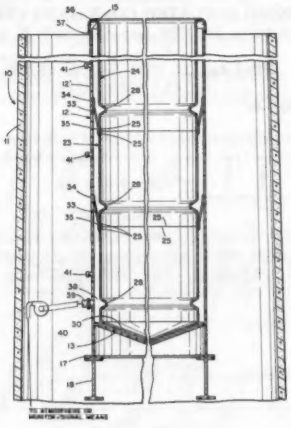
scavenging means (65) for communicating said drain path (68, 68*a*, 68*b*) with said chamber (57) along a first portion of the element orbit at which the fluid exhibits a first pressure and for blocking communication of said drain path (68, 68*a*, 68*b*) with said chamber (57) along a second portion of said element orbit at which the fluid exhibits a different second pressure.

4,265,166

CORROSION RESISTANT MEMBRANE FOR CHIMNEY LINER

John A. Parker, Grand View, Mo.; Sid Handler, Williamsport, Pa., and Randolph W. Snook, Shawnee Mission, Kans., assignors to Pullman Incorporated, Chicago, Ill.

Filed Sep. 10, 1979, Ser. No. 73,814
Int. Cl.³ E04H *12/28*
U.S. Cl. 98—58 **21 Claims**



1. A chimney having in combination;

a tubular outer vertically extending liner,

an inner tubular membrane shell substantially vertically coextensive with said liner and being radially spaced therefrom to provide and an annular enclosed space therebetween,

means supporting said inner membrane from said outer liner, and

means connected to said liner communicating with said space to provide a minus atmospheric pressure within said space.

4,265,167

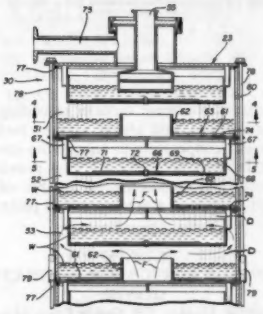
DEOXYGENATING UNIT

Harry G. Mojonnier and Sigmund P. Skoli, both of Chicago, Ill., assignors to Mojonnier Bros. Co., Chicago, Ill.

Continuation of Ser. No. 871,539, Jan. 23, 1978, abandoned. This application Jun. 20, 1979, Ser. No. 50,158
Int. Cl.³ B01D *19/00*; A23L *2/00*; B01F *3/04*
U.S. Cl. 99—323.2 **12 Claims**

1. A modular gas-exchange deoxygenating column for removing oxygen-containing air from water, comprising, in combination, a water exhaust pump bottom unit, water level control means mounted in and on the pump bottom unit for controlling the water level therein, a plurality of deoxygenating units separably mounted atop the pump bottom unit in vertical array, interconnector rod means interconnecting the units, each deoxygenating unit including an outer unit wall, a foraminous baffle sheet extending inwardly from the wall, and a stack member extending upwardly from the baffle sheet, the wall, sheet and stack together forming a foraminous-bottomed retainer for temporarily retaining water, the retained water forming a first gas barrier, and the water falling from the foraminous sheet being brought into first intimate contact with upwardly flowing gas and metering device means for introducing carbon dioxide gas into the column at a positive pressure, so as to provide virtually complete exchange of carbon dioxide for the oxygen-containing air previously dissolved in the water.

6. A system for deaerating water to be used in brewing beer



and the like, the system comprising water flow control means for providing an even flow of water, a gas-exchange deaerating column connected to the water flow control means for receiving water therefrom and comprising a liquid exhaust pump unit bottom, water level control means mounted in and on the pump unit for controlling the water level therein and a plurality of deoxygenating unit modules separably mounted atop the pump unit in vertical array, interconnector rod means interconnecting the column units, each deoxygenating unit module including an outer unit wall, a foraminous retainer baffle sheet extending inwardly from the wall and a stack member extending upwardly from the baffle sheet, the wall, sheet and stack together forming a foraminous-bottomed retainer for temporarily retaining a layer of water, the column further including metering device means for introducing carbon dioxide gas into the column at a positive pressure so as to provide virtually complete exchange of carbon dioxide for the oxygen-containing air previously dissolved in the water.

4,265,168

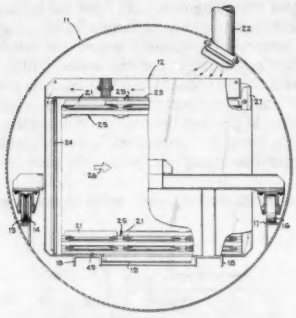
STEAM TABLE TRAY SPACING APPARATUS

Tony T. Chiu, Los Gatos; Bruce M. Wright, San Jose; Jurgen H. Strasser, Mountain View, and Bruce M. Harper, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.

Division of Ser. No. 951,549, Oct. 16, 1978, Pat. No. 4,225,626. This application Feb. 1, 1980, Ser. No. 117,593
Int. Cl.³ A23L *3/10, 3/12*; A47J *27/00*
U.S. Cl. 99—448 **13 Claims**

1. A spacer assembly for steam table trays to be carried in a car adapted to be disposed within a cooking retort, said assembly comprising a rectangular frame having two side frame members and two end frame members, and a plurality of equally spaced longitudinal frame members extending between said two end frame members substantially parallel to said side frame members, and a plurality of support pads attached to said longitudinal frame members and equally spaced thereon so that the distance laterally between adjacent support pads accom-

modates the width of a steam table tray and the distance longitudinally between adjacent support pads accommodates the length of a steam table tray, each of said support pads including a pad body having a planar support surface thereon with a centrally disposed land projecting therefrom, said land having



peripherally spaced abutment surfaces extending toward said planar support surface, said planar support surface and said abutment surfaces cooperating to engage the corners of adjacent steam table trays, whereby a grid is provided which is adapted to receive a predetermined number of steam table trays in spaced relation in a predetermined pattern.

4,265,169

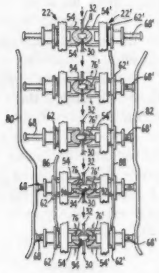
METHOD AND APPARATUS FOR PRODUCING PITTED OLIVES

Jesus A. Silvestrini, Hualpa 235, Godoy Cruz, Mendoza, Argentina

Continuation-in-part of Ser. No. 855,821, Nov. 30, 1977, abandoned, and Ser. No. 27,404, Apr. 5, 1979, abandoned. This application Jul. 2, 1979, Ser. No. 53,829

Int. Cl.[3] **A23N** *4/08, 4/22*

U.S. Cl. 99—494 **8 Claims**



1. Apparatus for separating the meat of an olive into two end portions and preparing such an olive for packing, comprising

means for receiving an olive and producing a cut substantially through the meat of said olive in a plane transverse to an axis extending through the blossom and stem ends of said olive, thus defining a pair of olive meat end portions each extending around and adhered to a portion of the pit of said olive, said receiving and cut producing means being configured to restrain movement of said meat end portions along said axis toward said receiving and cut producing means while permitting movement of the pit of said olive generally along said axis;

first punch means aligned with and mounted for reciprocation along said axis between two positions, in one said position said first punch means being outside the end of one said meat end portion remote from said receiving and cut producing means and in the other said position said first punch means extending at least partially through said one end portion sufficiently to dislodge said pit from said one end portion;

second punch means generally opposed to said first punch means and aligned with and mounted for reciprocation along said axis between two positions, in one said position said second punch means being outside the end of the other said meat end portion remote from said receiving and cut producing means and in the other said position said second punch means extending at least partially through said other end portion sufficiently to dislodge said pit from said other end portion; and

means for reciprocatingly moving said first and second punch means between said first and second positions, whereby the two olive meat end portions may be freed from the pit.

4,265,170

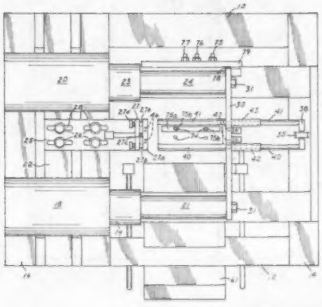
SOLENOID ACTUATED CONTAINER CRUSHER

Everett E. Schulze, Jr., 1700 Jasper St., Suite E, Aurora, Colo. 80011

Filed Aug. 21, 1979, Ser. No. 68,479

Int. Cl.[3] **B30B** *9/32*

U.S. Cl. 100—49 **8 Claims**



1. A small container crushing assembly comprising:

(a) frame means,

(b) holder means inclusive of a pair of horizontal, spaced rods mounted on said frame means for a container to be crushed, supporting such container in a longitudinal position,

(c) anvil means against which an end of a container is crushed mounted adjacent one end of said holder means, including a limited movement face means normally spring biased away from said anvil means and movable to said anvil means under influence of a container being crushed,

(d) flat faced crusher bar means mounted normally to said pair of rods arranged to reciprocate toward and away from said anvil means, and

(e) solenoid motivating means including at least one coil and a plunger interconnected with said crusher bar means for reciprocating the same toward said anvil means on activating said solenoid motivating means to draw said at least one plunger in said at least one coil of said solenoid motivating means for crushing a container on said holder means under full force of said solenoid motivating means.

4,265,171
APPARATUS FOR CONVEYING AND DEWATERING WET COARSE SCREENINGS DEBRIS

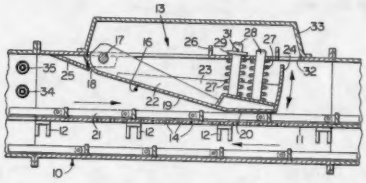
Oswald Busse, and Hugo Klesper, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke Michelbacher Huette, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,917

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1978, 7824274[U]

Int. Cl.³ B30B *9/06*

U.S. Cl. 100—118 **8 Claims**



1. In apparatus for conveying and dewatering wet coarse screenings debris embodying a drag chain conveyor having a conveying flight, the improvement comprising,

(a) a pressing unit having a pressure plate mounted above said conveying flight and exerting a downward pressure on said wet coarse screenings debris,

(b) a trough having a perforated bottom disposed subjacent said conveying flight in the vicinity of said pressure plate, and

(c) said pressure plate being of a width generally conforming to that of said trough.

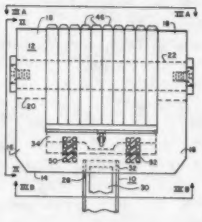
4,265,172
SELECTIVE DRUM SERIES MARKING HEAD

Monti El-Souessi, 632 Stoops Ferry Rd., Coraopolis, Pa. 15108

Filed Jun. 4, 1979, Ser. No. 44,863

Int. Cl.³ B41J *1/32*

U.S. Cl. 101—29 **8 Claims**



1. A numbering head, for impressing a mark upon a workpiece, adaptable to a device having a force transmitting movable hammer, comprising:

a. a frame having a base and two spaced prongs, said prongs each including an elongated aperture and being positionable against a workpiece, said base including an aperture therethrough;

b. a shaft supported from said prong apertures sized and disposed for sliding motion in the direction of the elongation of said prong apertures;

c. a plurality of marking wheels supported on said shaft between said prongs;

d. a yoke disposed within said frame including a first portion contactable with said marking wheels and a second portion aligned with said base aperture;

e. means for biasing said yoke into contact with said wheels; and

f. means for affixing said frame to said force transmitting device such that, with said prongs positioned against a workpiece, force is transmitted by said hammer to said second portion of said yoke, said force being transmitted through said base aperture, said force being further transmitted from said yoke to said wheels and to said workpiece.

4,265,173
NUMBERING MACHINE WITH CHECK DIGIT FUNCTION

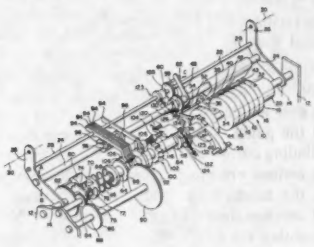
Mutsumi Takahashi, Kawasaki; Toshio Uwabe, Tokyo; Toshio Nagase, Yokohama, and Shosuke Sato, Tokyo, all of Japan, assignors to Tokyo Keiki Company Ltd. and Totec Co., Ltd., both of Tokyo, Japan

Filed Oct. 27, 1978, Ser. No. 955,235

Claims priority, application Japan, Oct. 31, 1977, 52/130405; Nov. 1, 1977, 52/131003; Feb. 17, 1978, 53/17432

Int. Cl.³ G06F *11/10*; B41J *3/40*

U.S. Cl. 101—79 **9 Claims**



1. A numbering machine in which each of code numbers to be printed and a check digit number associated therewith are printed simultaneously, said machine comprising:

a print unit including a plurality of numbering type wheels for successively setting the code numbers in response to print operations;

a check digit type wheel including a predetermined circulating sequence of digits for check digits corresponding to the code numbers to be printed by said print unit; and

a check digit type wheel drive control means whereby in response to a change of the code number of said print unit by a print operation, the check digit printing digit on said check digit type wheel is changed according to a predetermined number of skips, said check digit type wheel drive control means including:

synchronous drive means for rotating said check digit type wheel in synchronism with the intermittent rotation of the numbering type wheel corresponding to the least significant digit place;

synchronous drive releasing means for disengaging said synchronous drive means with said check digit type wheel in response to a change of the code number on the numbering type wheels of said print unit dictating a skipping of said circulating sequence of digits for check digits;

a driving source for imparting a rotational driving force to said check digit type wheel in response to the disengagement of said synchronous drive releasing means; and

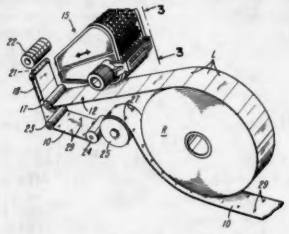
rotational angle control means whereby said check digit type wheel is rotated by said driving source through a predetermined rotational angle corresponding to a predetermined number of skips of the circulating check digit pattern corresponding to a change of the code number.

4,265,174

ENDLESS PRINTING BAND AND SUPPORT ASSEMBLY

William A. Jenkins, Englewood, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Filed Nov. 15, 1978, Ser. No. 960,911
Int. Cl.[3] B41J 1/20
U.S. Cl. 101—111 8 Claims



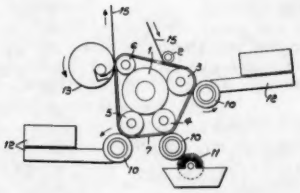
1. A printing head assembly adapted for use in a compact handheld label printing and dispensing apparatus, comprising a first row of flexible endless printing bands arranged in side-by-side relation, a second row of flexible endless printing bands arranged in side-by-side relation and spaced from the first row in tandem relation, the corresponding printing bands in the first and second rows having corresponding peripherally spaced raised printing characters, guide means within the printing bands and forming a printing station, a corresponding annular indexing gear within each of the printing bands and cooperating with the guide means to support the band, the indexing gears including corresponding gear teeth disposed between the adjacent endless printing bands and forming narrow spaces between the bands, a row of corresponding transfer gears disposed between the first and second rows of printing bands and connecting the gear teeth of the indexing gears for the bands in the first row with the gear teeth of the indexing gears for the corresponding bands in the second row to effect simultaneous indexing of each set of two corresponding bands within the first and second rows, and setting means supported for both axial and rotary movement within the indexing gears for one of the row of bands for indexing each set of corresponding indexing gears to present different sets of characters for printing.

4,265,175

CENTRAL SUPPORT ARRANGEMENT FOR PRINTING SYSTEMS

Richard K. Smejda, 192 Edmund Ave., Paterson, N.J. 07502

Continuation-in-part of Ser. No. 902,954, May 4, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 162,174
Int. Cl.[3] B41F 9/02, 15/10, 13/20, 5/08
U.S. Cl. 101—115 9 Claims



1. A printing system comprising:

a center drive roller mounted for rotation in a given direction,

a plurality of backing rollers mounted around and in contact with said center roller and driven in the opposite direction,

means for independently adjusting the position of each of said backing rollers in selective positions about the circumference of said center roller,

an endless flexible blanket sleeve stretched around and enveloping and rotating with said backing rollers to urge said backing rollers into contact with said center roller, and

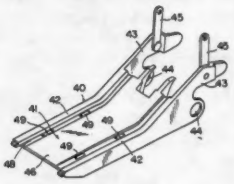
printing means mounted at selective positions about said blanket sleeve and adapted to print on a substrate material passing between said blanket sleeve and printing means.

4,265,176

CLOG PREVENTIVE DEVICE FOR LABEL PRINTING AND APPLYING MACHINE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Japan

Filed Jun. 1, 1979, Ser. No. 44,659
Int. Cl.[3] B41F 35/00; B41K 5/02
U.S. Cl. 101—292 13 Claims



1. A clog prevention device for use with a label printing and applying machine for preventing clogging of the feed path of a label strip over the platen of the label printing and applying machine; said clog prevention device comprising.

a platen for use in the label printing and applying machine; said platen including an upper surface over which passes a complete label strip, comprised of a series of labels and a supporting carrier paper for the labels, and adhesive between the labels of the series and the supporting carrier paper, the individual labels of the series thereof are printed on said platen;

said platen further includes a forward tip, around which the carrier paper may be wrapped and comprises an underside past which the carrier paper may be passed following separation therefrom of the previously adhered labels of the series thereof;

a passage along said platen upper surface defined by side walls extending longitudinally along said platen; label strip relief means associated with said platen for acting upon the label strip as it moves through said passage for preventing the label strip from contacting said side walls of said passage;

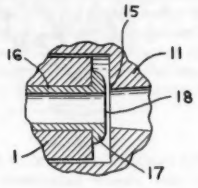
said relief means further comprising a carrier paper guide recess in said platen underside which is defined by and between opposed underside side walls; and said carrier paper guide recess having a width less than the width of said passage and substantially the same width as the width of the carrier paper for guiding the carrier paper while contacting both side edges of the carrier paper, whereby the complete label accumulation strip may be guided over said platen upper surface through being guided at said underside of said platen.

4,265,177

DEVICE IN BLASTING CAP FOR LOW-ENERGY FUSE

Hans Lundborg; Leif Kristensen, and Stig Nyqvist, all of Nora, Sweden, assignors to Nitro Nobel AB, Gyttorp, Sweden

Filed Mar. 26, 1979, Ser. No. 23,608
Claims priority, application Sweden, Apr. 7, 1978, 7803931
Int. Cl.[3] C06C *7/00*
U.S. Cl. 102—275.9 9 Claims



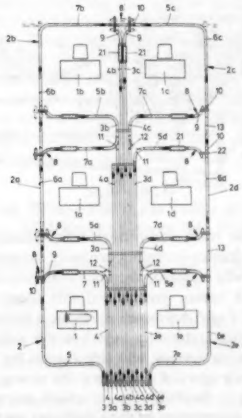
1. The combination comprising a blasting cap and a low energy fuse, the low energy fuse comprising a hose adapted for detonation to transmit a blast wave, the blasting cap comprising a tubular cover having an open end and a closed end, explosive means in said cover, said hose having one end inserted into the open end of the cover in facing relation with said explosive means, and moisture-proof barrier means between said fuse and said explosive means, said moisture-proof barrier means including a diffusion-tight rigid tube inserted into said one end of the hose and a flange on said tube extending outside said hose in proximity with said one end of the hose, and a diffusion-tight film or foil covering said flange to seal the interior of said tube and thereby said hose from the interior of said cover, said film or foil being ruptured by the blast wave upon detonation of said hose.

4,265,178

CONVEYOR APPARATUS FOR INTRAPLANT CONVEYANCE

Gustav G. Veith, Laiming, Fed. Rep. of Germany, assignor to Gustav Georg Veith GmbH & Co. KG, Munich, Fed. Rep. of Germany

Filed Oct. 18, 1979, Ser. No. 86,263
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1978, 2845799
Int. Cl.[3] B61L *27/04*
U.S. Cl. 104—88 4 Claims



1. A rail system for conveying goods within a plant or the like in which there are at least two work stations, said rail system being of the type having a feeder rail for each of said at least two work stations, each feeder rail extending from a terminal zone towards its work station, and a return rail for each of said at least two work stations, each return rail extending from its work station to said terminal zone, said rail system being characterized by:

A. a pair of rail loops, one for each of said at least two work stations, each rail loop comprising rail arranged as

(1) a first segment having an entry end connectable with the feeder rail for the work station and having a departure end,

(2) a second segment which is spaced from the first segment and which has a departure end connectable with the return rail for the work station and an entry end, and

(3) a third segment having an entry end connectable with the departure end of said first segment and a departure end connectable with the entry end of said second segment;

B. a bypass rail segment having an entry end adjacent to the departure end of the third segment of one of said rail loops and a departure end adjacent to the entry end of the third segment of the other of said rail loops;

C. said one rail loop having shiftable rail means at the departure end of its third segment for connecting said third segment alternatively and selectably with the second segment of said one rail loop and with the entry end of said bypass segment; and

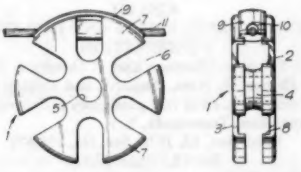
D. said other rail loop having shiftable rail means adjacent to the entry end of its third segment for connecting the same alternatively and selectably with the departure end of said bypass segment and with the departure end of its first segment.

4,265,179

LOAD-TRANSFER DEVICE

Alan W. Tupper, The Weavers House, Castle Combe, Wiltshire, SN14 7HX, England, and Peter R. Flux, Calne, England, assignors to Alan William Tupper, Wiltshire, England

Filed Mar. 19, 1979, Ser. No. 21,967
Claims priority, application United Kingdom, Mar. 30, 1978, 12342/78
Int. Cl.[3] B61B *12/02*
U.S. Cl. 104—182 16 Claims



1. A system for enabling a load to be moved along a guide path comprising:

(a) a pair of wheels, at least one being formed with several recesses evenly spaced around its periphery, the recesses being spaced by projecting parts of the wheel;

(b) a slug member shaped to generally conform to, and located between, juxtaposed peripheral parts of the wheels to allow relative rotation between at least one of the wheels and the slug member;

(c) an elongate guide member defining the aforesaid guide path and extending between the wheels as a chord across the wheels at peripheral parts thereof;

(d) means to maintain the elongate member in sliding contact with the slug member to permit relative movement between the wheel and slug member assembly and the elongate member while locating the elongate member with respect to the wheel and slug member assembly;

(e) rigidly fixed support means supporting one of the group consisting of said wheel and said elongate member; and

(f) load attachment means associated with the other of the group consisting of said wheel and said elongate member.

4,265,180

STEERING MEANS FOR GUIDED VEHICLES

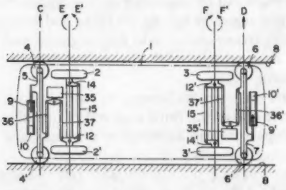
Yukio Uozumi, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Feb. 27, 1979, Ser. No. 15,667

Claims priority, application Japan, Mar. 1, 1978, 53-22920

Int. Cl.[3] B61B *13/00*; B61F *9/00*

U.S. Cl. 104—247 **11 Claims**



1. Guided vehicle for use with combined guide rail means and running track means comprising a vehicle body, steerable running wheel means provided at each end portion of said vehicle body adapted to run on running track means, guide wheel means adapted to run along the guide rail means, the guide rail means being provided at opposite sides of the running track means, said guide wheel means being comprised of deformable tire means and movable with respect to said vehicle body in transverse direction of the body, steering linkage means connecting said guide wheel means with said running wheel means so that a transverse movement of the guide wheel means produces a steering movement of the running wheel means, restraining means comprised of friction means for providing a frictional resistance to the linkage means associated with the steering linkage means for applying a restraining force to the linkage means so that the steering movement is not produced in the running wheel means until steering force applied by the guide wheel means exceeds a predetermined value.

4,265,181

ROLLING BEARING WHEEL AND HUB SUPPORT COMBINATION

Kenneth D. Schreyer, Clarence; Earl T. Leverentz, North Tonawanda; Thomas R. Nusz, Amherst, and Reuben P. Benton, North Tonawanda, all of N.Y., assignors to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Nov. 13, 1978, Ser. No. 959,679

Int. Cl.[3] B61B *13/00*

U.S. Cl. 105—150 **9 Claims**

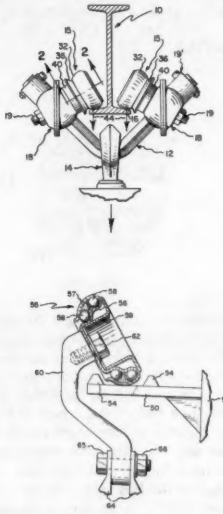
1. An overhead trackway and rolling trolley combination comprising:

a trackway having an upper planar wheel tracking surface;

a rolling bearing wheel and support assembly therefor arranged to run along said trackway surface;

said assembly including a load carrying and wheel support means; a wheel hub member anchored to said support means and comprising an inner race member defining an axis for rotation thereabout which is laterally inclined downwardly and outwardly relative to the plane of said trackway surface; an outer race wheel tread member enclosing said inner race hub member in spaced relation therefrom; and rolling bearing means disposed between said inner race hub and outer race wheel tread members, whereby said outer race wheel tread member is adapted to roll upon said trackway surface about said hub member;

said race members being fabricated from sheet material in the regions of their rolling bearing contact surfaces and having internal profiles in such regions which are complementary to the profiles of such rolling bearing means, whereby the spacing between said members permits limited relative floating movement therebetween when the wheel assembly is in its operative position while still maintaining contact between said rolling bearing means and said regions of said race members.



4,265,182

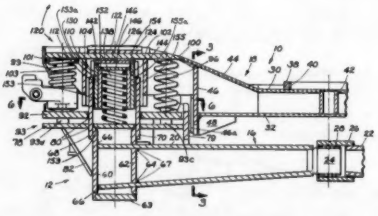
DAMPING RAILWAY CAR TRUCK

Robert K. Neff, St. Louis, and David P. Hillstead, St. Charles, both of Mo., assignors to ACF Industries, Inc., New York, N.Y.

Filed Jul. 2, 1979, Ser. No. 54,390

Int. Cl.[3] B61D *5/06, 5/10, 5/12, 5/52*

U.S. Cl. 105—197 D **6 Claims**



1. A railway car truck comprising: transversely spaced side frames, said side frames including centrally depressed portions having transversely aligned vertical slots which receive a plurality of truck spring groups and side frame stop means located inboard of said depressed portions, a bolster including a center connection extending between the side frames and resting on the spring groups; said side frames including a hollow post extending upwardly between the spring groups; said bolster including a depending post which surrounds and is exterior to the upper portion of the side frame post, and bolster stop means which abut said side frame stop means to control lateral movement of the bolster relative to the side means; said

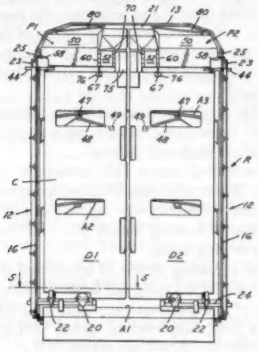
bolster stop means being spaced from said side frame stop means a distance sufficient to allow significant relative movement between the bolster and the side frames; a friction damping assembly including upper and lower wedges located within the side frame post; said lower wedge including an opening to receive a spring extending upwardly from said depressed portion of said side frame and extending into said upper wedge; said lower wedge including at least one inclined wear surface which interacts with and slidingly engages at least one wear surface on said upper wedge which is superimposed on the lower wedge wear surface; the upper wedge having an upper surface engaging a lower surface of the bolster whereby oscillations of said spring groups and bolster are damped by abutting surfaces of the lower wedges and side frame posts, increasing damping force as the bolster moves downwardly.

4,265,183

UPPER CLOSURE FOR AN END DOOR OF A RAIL CAR

Israel D. Peisner, Huntington Woods, and George H. Stol, Berkley, both of Mich., assignors to Whitehead & Kales Company, River Rouge, Mich.

Filed Oct. 22, 1979, Ser. No. 87,405
Int. Cl.³ B61D *17/06, 19/00*
U.S. Cl. 105—410 **8 Claims**



2. An end closure for a rail car having a side wall and means defining a vertical slot in said side wall near one end of said rail car, said end closure comprising an upright door and a panel, means mounting said door for lateral movement from a closed position across a lower portion of said one end of said rail car to an open position projecting through said vertical slot with at least a portion of said door disposed at the outer side of said side wall, means mounting said panel for lateral movement from a closed position across an upper portion of said one end of said rail car to an open position disposed at the inner side of said side wall, and means connecting said panel to said door to cause said panel to be moved to open and closed positions by the corresponding movement of said door.

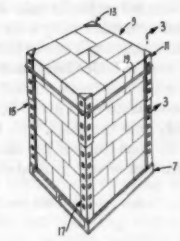
4,265,184

METAL CORNERBOARD FOR PALLETS

Clayton E. Cox, 1371 Eureka Canyon Rd., Watsonville, Calif. 95076

Filed Sep. 20, 1979, Ser. No. 77,345
Int. Cl.³ B65D *19/44*
U.S. Cl. 108—55.1 **1 Claim**

1. A corner structure for a pallet comprising in combination:
a. a top section, said top section having two side walls disposed at right angles to each other, forming an L-shaped structure;
b. a top cap of generally triangular configuration bridging the top walls of said L-shaped structure;
c. a plurality of tongues directed inwardly from each side wall of said top section, each of said tongues terminating in a down-turned end parallel to a side wall;
d. a bottom section of the same general configuration as said top section having side walls at right angles to each other and a bottom cap bridging the lower surfaces of said side walls;
e. said lower section having a plurality of slots formed in each side wall corresponding in placement and separation



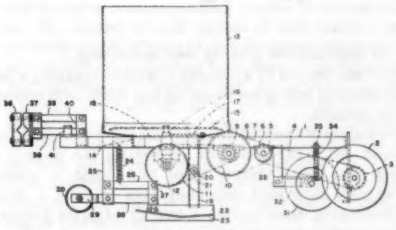
to the tongues in the top section whereby said top and bottom sections can be locked together to form a pallet corner, with said tongues entering said slots and locking against the side walls of the bottom section and
f. said top section and said bottom section have a plurality of tongues and slots in the respective sections, spaced vertically from each other whereby said sections can be locked together at various preselected heights to change the distance between said top and bottom caps.

4,265,185

PLUG MIX SEED PLANTER

Kevin G. Skipper, Merlin, Ontario, Canada

Filed Dec. 8, 1978, Ser. No. 967,590
Int. Cl.³ A01C *1/00*
U.S. Cl. 111—1 **2 Claims**



1. A plug planter for planting, in synchronization, gel and plugs containing sprouts, said planter comprising, in combination, a framework, ground-engaging wheels carried by said framework for supporting same, a container carried by said framework for storing a mixture from which the plugs are formed, said container having a discharge chute extending toward the ground, gate means within said chutes for intermittently discharging the plugs therefrom, a plow located below said discharge chute and movably supported by said framework, mechanically-operated, electrical make-and-break contact points connected to at least one of said wheels for controlling said gate means for controlling discharge of the plugs at predetermined intervals, a device carried by said planter for discharging measured quantities of gel synchronously with the discharge of the plugs, said device comprising a gel-containing tank, and discharge means for discharging gel from said gel-containing tank in uniformly-measured quantities, said discharge means comprises a cylinder, a piston in said cylinder, a piston rod connected to said piston, a solenoid coil

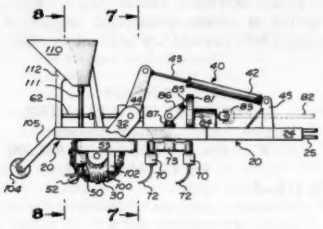
having a core connected with said piston rod for moving said piston rod and said piston in one direction in said cylinder when said solenoid coil is activated, a spring for moving said piston rod and said piston in the opposite direction when the solenoid coil is activated, an inlet in one end portion of said cylinder, an outlet in another end portion of said cylinder, whereby a measured quantity of the gel moves from said inlet to said outlet when the piston moves in said cylinder in a direction toward said outlet from said inlet, pipe means having a discharge end located adjacent said discharge chute and having another end communicating with said cylinder outlet, second pipe means connecting a lower portion of said gel-containing tank with said cylinder inlet, said solenoid coil being activated by said make-and-break contact points to cause the uniformly-measured quantities of gel to be discharged substantially simultaneously with the plugs, with the rate of discharge of the plugs and the quantities of gel also being coordinated with the rate of rotation of said ground-engaging wheels.

4,265,186

GRAIN DRILL WITH OSCILLATING PLANTER BAR

William K. Nichols, P.O. Box 18, Corral, Id. 83322

Filed Aug. 20, 1979, Ser. No. 67,606
Int. Cl.[3] A01C *5/06, 19/00*
U.S. Cl. 111—85 **33 Claims**



1. An apparatus for planting seed comprising:

(a) a frame carried by a plurality of ground engaging wheels;

(b) means for raising and lowering said frame with respect to the ground;

(c) a planter bar carried by said frame carrying a plurality of seed dispensing boots for penetrating the ground and inserting seeds therein when said frame is lowered, wherein each seed dispensing boot includes a ground penetrating blade having a leading edge for forming a furrough in the ground in which to insert seeds, with each of said seed dispensing boots connected to said planter bar by swivel means enabling each seed dispensing boot to rotate freely and said ground penetrating blade to steer said seed dispensing boot along the ground track of said planter bar as said frame is moved over the ground, and wherein each seed dispensing boot is attached to said swivel means by a means enabling each seed dispensing boot to be deflected upwardly toward said frame upon engaging an obstruction in the ground, the said means urging said boot into ground engagement when the boot no longer engages the obstruction, and wherein each seed dispensing boot includes a furrough covering plate disposed above and outwardly around each seed dispensing boot, each furrough covering plate being curved and engaging the ground on either side of the furrough and covering the furrough after seeds have been inserted therein;

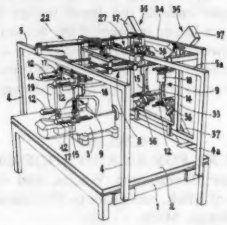
(d) means for oscillating said planter bar laterally as said ground engaging wheels move across the ground.

4,265,187

APPARATUS FOR APPLYING ELASTIC RINGS TO TUBULAR GARMENTS

Giancarlo D. Torre, Milan, Italy, assignor to Rockwell-Rimoldi, S.p.A., Biassono, Italy

Filed Jun. 4, 1979, Ser. No. 44,884
Claims priority, application Italy, Jun. 15, 1978, 24590 A/78
Int. Cl.[3] D05B *21/00*
U.S. Cl. 112—121.26 **9 Claims**



1. An apparatus for applying elastic rings to tubular garments of the type having a supporting frame with a sewing machine mounted therein and with opposed piece-carriers that are alternately movable between a position of garment loading and a sewing zone position for effecting a seaming operation by the sewing machine on the garment carried thereby said apparatus comprising:

(a) a movable structure (8) mounted on the supporting frame above the sewing machine having a piece carrier unit (9) assembled on each end thereof;

(b) a first actuating means (22) connected to said movable structure (8) for effecting longitudinal movement thereof and for simultaneously moving one of said piece-carriers to and from a loading means (35) and the other to and from the sewing zone;

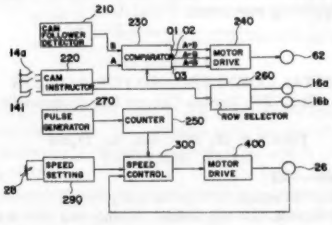
(c) a second actuating means 27 connected to said movable structure (8) for rotating the latter to effect a reversal of positions of said piece-carriers units (9) after movement of the latter from said loading means (35) and the sewing zone by said first actuating means (22).

4,265,188

ELECTRIC SEWING MACHINE

Kazuo Suzuki, Oohasuhigashi; Hirokazu Koda, Gose; Kenichi Nakamura, Nara; Syuich Yoshikawa, Nara, and Naoki Ohara, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi and Sharp Kabushiki Kaisha, Osaka, both of, Japan

Filed Jun. 5, 1979, Ser. No. 45,762
Claims priority, application Japan, Jun. 6, 1978, 53-68465
Int. Cl.[3] D05B *3/02, 3/06*
U.S. Cl. 112—158 B **8 Claims**



1. An electric sewing machine having a thread carrying needle which is reciprocated in an axial direction thereof and is jogged in a lateral direction, a cloth advancing mechanism for advancing a cloth in a direction perpendicular to the lateral

direction at a predetermined pitch after each stitch is formed for forming a predetermined pattern of stitches, said sewing machine comprising:

a plurality of individual pattern information carrying means each provided for controlling the lateral movement of the thread carrying needle, said means including the first information carrying means carrying information indicative of a pattern of tacking stitches of a button hole defined on a cloth, the second information carrying means carrying information indicative of a pattern of left side stitches of the button hole and the third information carrying means carrying information indicative of a pattern of right side stitches of the button hole;

means for reading information carried on any one of said information carrying means;

pattern instructing means including at least one switch for generating an instruction to sew button hole stitches;

pulse generating means for producing a pulse upon the sewing of each stitch in synchronism with the rotation of the shaft for driving the needle;

means for selecting the location of said information reading means to allow said information reading means to read the information carried by said first information carrying means in response to instructions fed from said pattern instructing means;

means for counting the number of tacking stitches formed on the cloth by counting the number of pulses fed from said pulse generating means; and

means for selecting the location of said information reading means to allow said information reading means to read information carried by said second information carrying means or by said third information carrying means when said tacking stitches are completed.

4,265,189

SEWING PATTERN DISPLAYING ARRANGEMENTS

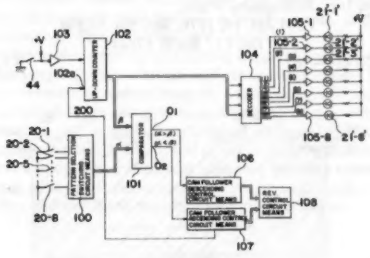
Kazuo Suzuki, Higashiosaka; Hirokazu Koda, Gose; Kenichi Nakamura, Nara; Syuich Yoshikawa, Yamatokooriyama, and Naoki Ohara, Toyota, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka and Aisin Seiki Kabushiki Kaisha, Aichi, both of, Japan

Filed Jun. 12, 1979, Ser. No. 47,861

Claims priority, application Japan, Jun. 13, 1978, 53/71715

Int. Cl.[3] D05B *3/02, 79/00*

U.S. Cl. 112—158 E **3 Claims**



1. In a sewing machine capable of electrically sewing an object subject to a sewing pattern selected, a sewing pattern displaying arrangement capable of displaying in a visible mode a transient process from one present selection of the sewing pattern to the successive selection of the sewing pattern, which comprises in combination;

a plurality of sewing pattern selection buttons for optionally selecting a sewing pattern from a plurality of sewing patterns;

a plurality of displaying members capable of correspondingly showing respective selections of said sewing patterns, the number of said displaying members being correspondingly equivalent to the number of said sewing patterns;

a plurality of sewing pattern information carrying members constituting one unit, each member of which is to carry an information of said sewing pattern, respectively;

at least one picking-up member for picking up one sewing pattern information from said plurality of said sewing pattern information carrying members;

at least one sewing pattern information carrying member selector means for transferring said picking-up member to one of said sewing pattern information carrying members specifically selected subject to an actuation of one of said plurality of sewing pattern selection buttons;

a circuitry means capable of electrically actuating in succession certain numbers of said displaying members one by one following a transferring movement of said picking-up member from one sewing pattern information carrying member presently selected to the succesively selected sewing pattern information carrying member, with said certain numbers of said displaying members respectively provided for the corresponding numbers of said sewing pattern information carrying members being correspondingly spaced between said one sewing pattern information carrying member and said successively selected sewing pattern information carrying member,

said circuitry means including,

a switching means including a first inverter, said switching means being arranged to produce a clock pulse, every time after said picking-up member is transferred selectively in an upward direction and in a downward direction on said unit from one to another successive sewing information carrying member;

an up-down counter means, said up-down counter means being arranged to count said clock pulse impressed through said first inverter selectively in an increment mode and in a decrement mode subject to one of said selective directions of vertical transit of said picking-up member, thereby to output a respective coded information signal corresponding to said successive selection; and

a decoder circuit means provided with a plurality of outputs and including a corresponding number of second inverters, the number of said outputs of said decoder corresponding to said number of said displaying members, each of said displaying members being constituted by a respective light-emitting member and connected to a corresponding one of said second inverters, said decoder circuit means being impressed by an output from said up-down counter, thereby to convert said coded signal into a respective signal correspondingly actuating one of said light-emitting members correspondingly provided for the respective displaying member through said corresponding one of said inverters.

4,265,190

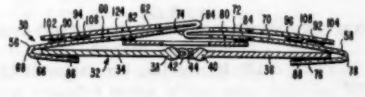
SEWING AID FOR SLIDE FASTENER AND METHOD

George B. Moertel, Conneautville, Pa., assignor to Textron, Inc., Providence, R.I.

Filed Jun. 1, 1978, Ser. No. 911,570

Int. Cl.[3] D05B *3/12, 35/06*

U.S. Cl. 112—265.2 **81 Claims**



1. A device for use in sewing at least a portion of a slide fastener having a pair of carrier tapes to an article having an opening defined by edge portions on opposite sides thereof comprising

a guide for extending along the article edge portions bordering opposite sides of the opening in the article,

said guide having a width sufficient to extend over portions of both carrier tapes of the slide fastener, and having a length sufficient to extend along substantially the length of the slide fastener portion to be sewn to the article,

said guide being substantially inelastic and stable in the width and length dimensions thereof,

means for removably attaching the guide to both carrier tapes of the slide fastener, and

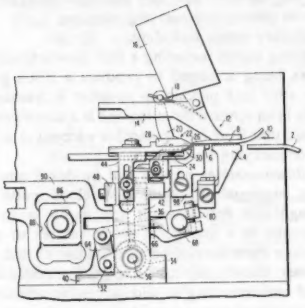
means for removably attaching the edge portions of the article to the guide to mount the slide fastener on the article in position to be sewn to the article.

4,265,191

SEWING MACHINE WITH TRIMMER DRIVE MECHANISM

Edward A. Kelly, Wethersfield, Conn., assignor to The Merrow Machine Company, Hartford, Conn.

Filed Jun. 6, 1979, Ser. No. 46,400
Int. Cl.[2] D05B 65/02
U.S. Cl. 112—288 **10 Claims**



1. A sewing machine, comprising,

a feed member for engaging and moving articles in a feed direction through a sewing station where stitches are applied to the article, a feed drive mechanism for driving the feed member,

a trimmer on the outfeed side of the sewing station for cutting dangling chains of stitches from articles sewn by the machine, said trimmer including a pair of blades, a trimmer drive mechanism for producing relative movement between the trimmer blades,

the improvement wherein said trimmer drive mechanism includes a rotary member, means for operatively connecting the rotary member to one of the trimmer blades to drive the trimmer blade in response to rotation of the rotary member, a first one-way clutch supporting said rotary member for movement in one rotary direction, a second one-way clutch for driving said rotary member in said rotary direction, and means for rotationally oscillating said second one-way clutch to rotate said rotary member and move said one of said trimmer blades.

4,265,192

AUXILIARY HYDRAULIC MANEUVERING SYSTEM FOR SMALL BOATS

Garf L. Dunn, 31120 Hunter Dr., Farmington Hills, Mich. 48018

Filed Feb. 5, 1979, Ser. No. 9,106
Int. Cl.[3] B63H 25/46
U.S. Cl. 114—151 **1 Claim**

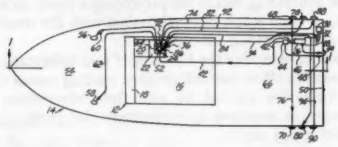
1. A small boat with an auxiliary hydraulic maneuvering system comprising a hull with a bow portion and a stern portion and a transom behind the stern portion and with a water line at which the boat floats when immersed in water,

a hydraulic pump having connected thereto a water intake conduit with a water inlet opening adapted to be mounted in the hull below the water line thereof,

power-operated means for driving said pump,

starboard and port bow thrust nozzles adapted to be mounted in and transversely to the hull bow portion on opposite sides thereof above the water line thereof in a downward and outward discharge direction relatively to said hull,

starboard and port stern sidewise thrust nozzles adapted to be mounted in and transversely to the hull stern portion on opposite sides thereof above the water line thereof in a downward and outward discharge direction relatively to said hull,



forward thrust nozzles adapted to be mounted in and transversely to the hull stern portion on opposite sides thereof above the water line thereof in a downward and outward and rearward discharge direction relatively to said hull,

backward thrust nozzles adapted to be mounted in and transversely to the hull stern portion on opposite sides thereof above the water line thereof in a downward and outward and forward discharge direction relatively to said hull,

hydraulic pressure discharge conduit means connecting said pump to said nozzles,

control valve means disposed in said hydraulic pressure discharge conduit means between said pump and said nozzle means in flow-regulating relationship therewith,

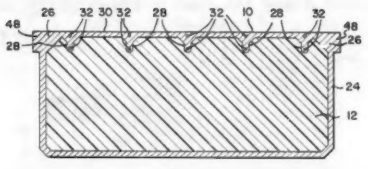
and means for shifting said control valve means between closed and open positions thereof.

4,265,193

CONCRETE MARINE FLOAT AND METHOD OF FABRICATING

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Jul. 16, 1979, Ser. No. 57,594
Int. Cl.[3] B63B 35/44
U.S. Cl. 114—267 **6 Claims**



1. A marine float, comprising a concrete shell having a bottom, a deck, two opposed sidewalls having lower edges contacting opposite side edges of said bottom and upper edges contacting opposite side edges of said deck and two opposed endwalls having lower edges contacting respective end edges of said bottom, upper edges contacting respective end edges of said deck, and opposed side edges contacting opposite side edges of said sidewalls, said floats being adapted for joining other of said floats endwall-to-endwall, said deck having a plurality of downwardly projecting transverse and longitudinal reinforcing ribs integrally formed therewith, thereby al-

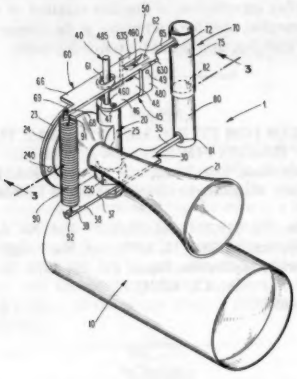
lowing said deck to have a relatively thin mean thickness, said float further including a tubular conduit extending transversely beneath each transverse rib in contact with the lower edge thereof, and a tie rod extending through each of said conduits with the ends of said tie rods projecting from the sidewalls of said float to allow said tie rods to be secured to fastening members which fasten said floats to each other.

4,265,194

FIRE ALARM HEAT SENSOR

Joseph T. Sullivan, 1170 Country La., Huntingdon Valley, Pa. 19006

Filed May 4, 1979, Ser. No. 36,390
Int. Cl.³ B67D *5/32;* **G01K** *11/06;* **G08B** *17/00*
U.S. Cl. 116—106 **5 Claims**



1. A heat sensor comprising:

a support member having a fulcrum and first and second portions;

an actuating member pivotally mounted with said support member and having first and second portions inversely moveable about said fulcrum;

a spring operatively engaging in tensioned condition said first portion of said support member and said first portion of said actuating member; and

heat responsive means for collecting heat from the environment and transferring same to a fusible means, said heat responsive means having two separable portions each bound to the other by said fusible means to form an interengaging assembly wherein said separable portions of said heat responsive means comprise a first cylindrical element operatively engaging said second portion of said actuating member and a second cylindrical element operatively engaging said second portion of said support member, said first and second cylindrical elements forming outer and inner cylindrical sleeves which telescopically engage each other and are fused together by a eutectic bond.

4,265,195

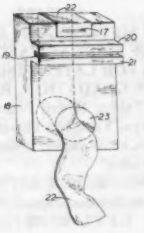
MARKERS FOR ELECTRIC FENCES

Wayne G. Higgins, Valley High On Lost River Rd., North Woodstock, N.H. 03262

Continuation-in-part of Ser. No. 969,465, Feb. 1, 1979, abandoned. This application Sep. 20, 1979, Ser. No. 77,397
Int. Cl.³ A01K *3/00;* **E04H** *17/00*
U.S. Cl. 116—209 **2 Claims**

1. A fence marker comprising:

a plate of stiff elastic insulating material having front and back faces, said front face having thereacross a groove with substantial length and substantially parallel sides, said groove having a depth at least somewhat greater than the diameter of wire to which said marker is to be attached and a width somewhat less than said diameter, said groove being of such width to cause said parallel sides to grip said wire tightly when said wire is pressed into said groove, said groove being located at a substantial distance from a center line across said front face such that a larger portion of said plate tends to hang below said wire and a smaller portion of said plate is held above said wire,



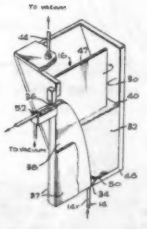
a streamer attached to said smaller portion and extending downwardly over a portion of said back face opposite said groove to prevent contact between said streamer and said wire, said lower larger portion having an aperture through said faces thereof, and said streamer extending through said aperture to hang from said front face of said larger portion.

4,265,196

TONER APPLICATOR APPARATUS

Alfred M. Nelson, Redondo Beach, and David L. Davis, Venice, both of Calif., assignors to AM International, Inc., Los Angeles, Calif.

Continuation of Ser. No. 726,912, Sep. 27, 1976, abandoned. This application Jun. 19, 1978, Ser. No. 917,424
Int. Cl.³ B05C *11/06, 19/00*
U.S. Cl. 118—50 **2 Claims**



1. Apparatus for applying magnetically attractable toner to a front face of a tape and for removing excess toner from the tape, comprising:

chamber walls forming a chamber for storing the toner to a predetermined level, said chamber forming inlet and outlet openings for passing said tape therethrough;

said chamber walls including a convex tape guide means for defining a tape path and for supporting a rear face of said tape above and below said toner level to permit the application of toner to said front face and substantially eliminate the application of toner to said rear face, the portion of the tape guide means disposed above the toner level having a smaller radius of curvature than the portion disposed below the toner level;

vacuum means positioned external to said chamber and coupled to the inside of said chamber for continually applying a vacuum to said chamber and drawing air into said outlet opening and across the front face of the tape

and into a region of the chamber immediately over the toner, producing an airflow in said chamber; and

baffle means disposed in said region of said chamber adjacent said outlet opening and in the path of said airflow for slowing the airflow in said chamber enabling toner carried in the airflow to become separated from the airflow and accumulate with the stored toner in the chamber.

4,265,197

DEVELOPING METHOD AND APPARATUS USING APPLICATION OF FIRST AND SECOND ALTERNATING BIAS VOLTAGES FOR LATENT IMAGE END PORTIONS AND TONE GRADATION, RESPECTIVELY

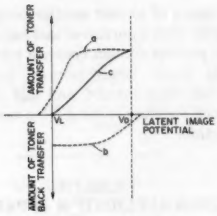
Tsutomu Toyono, Tokyo; Shunji Nakamura, Kawasaki; Junichiro Kanbe, Tokyo; Yasuyuki Tamura, Kawasaki, and Tohru Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

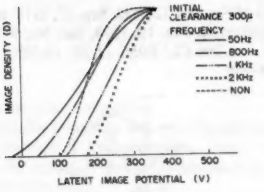
Filed Feb. 26, 1980, Ser. No. 124,910

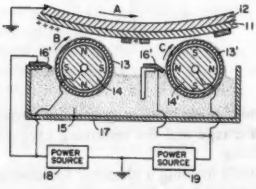
Claims priority, application Japan, Mar. 6, 1979, 54-25921

Int. Cl.³ G03G *15/09*

U.S. Cl. 118—657 **10 Claims**







1. A developing method in which a developer supporting member is opposed to a latent image bearing member with a clearance therebetween so that developer is caused to be transferred from said supporting member to said latent image bearing member to effect development, the improvement residing in that a first and a second developing portion are provided as said developer supporting member so that these portions effect development in the named order so as to complete the developing step, a first alternating bias for causing the developer to be transferred so as to develop mainly the edge portions of the latent image is imparted to said first developing portion and a second alternating bias for causing the developer to be transferred so as to to reproduce mainly the tone gradation of the latent image is imparted to said second developing portion.

10. A developing apparatus in which a developer supporting member is disposed with a clearance with respect to a latent image bearing member and development is effected with developer being caused to be transferred from said developer supporting member to said latent image bearing member, the improvement residing in that said developer supporting member comprises a non-magnetic rotatable member enclosing magnetic poles therein and that said apparatus has means for imparting a first developing alternating bias during a first rotation of said rotatable member, means for imparting a second developing alternating bias during a second rotation of said rotatable member, and means for changing over the alternating bias from said first alternating bias to said second alternating bias after termination of the first rotation of said non-magnetic rotatable member, whereby a developing bias is provided by said first and second alternating biases.

4,265,198

APPARATUS FOR FIXING HEAT-FUSIBLE TONER IMAGES FORMED ON A WEB

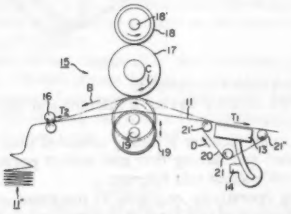
Yukimasa Shinohara, Yokohama, and Hiroo Ichihashi, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 819,141, Jul. 26, 1977, Pat. No. 4,218,499. This application Dec. 12, 1978, Ser. No. 968,800

Claims priority, application Japan, Jul. 30, 1976, 51-91834

Int. Cl.³ G03G *15/20*

U.S. Cl. 118—695 **14 Claims**



1. An apparatus for intermittently fixing a toner image formed on a web which is intermittently fed to a fixing station thereof, the toner image being formed by a toner image forming means located upstream of the fixing station with respect to the web feeding direction, said apparatus comprising:

a heated first roller at the fixing station for fusing and fixing the toner image on the web;

a second roller at the fixing station for press-contacting the web to said first roller;

instruction means for alternately generating a start signal for starting the fixing operation and a stop signal for stopping the fixing operation, while the web is between said first and second rollers;

shift means, responsive to the start and stop signals, for alternately changing the relative position of said first and second rollers between a first relative position wherein the web is gripped between said first and second rollers to fix the toner image, and a second relative position wherein the web is disengaged from said first roller to interrupt the fixing action of said first roller;

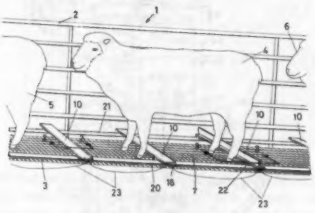
driving means, responsive to the start signal, for rotating at least one of said first and second rollers to transport the web; and

delay means, responsive to the start signal, for delaying the actuation of said driving means until a predetermined time after the first relative position has been established.

4,265,199
METHOD AND APPARATUS TO ASSIST IN PROVOKING FORWARD MOVEMENT OF ANIMALS

Donald L. Hopkins, Heywood, Australia, assignor to Alf Hannaford & Co. Pty. Ltd., Beverley, Australia

Filed Jan. 10, 1979, Ser. No. 2,469
Claims priority, application Australia, Jan. 10, 1978, PD2989
Int. Cl.³ A01K *15/00*
U.S. Cl. 119—29 **9 Claims**

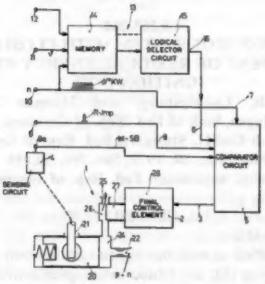


9. The method for the provoking of forward movement of sheep along a race having an electrically conductive floor comprising the steps of providing a plurality of transversely disposed insulated electrodes along the race at a height above the floor of between the sheep's leg hock and the lower surface of the sheep's hoof, the insulation preventing contact with the electrode by a sheep's leg by only forward and/or downward movement, and shocking the sheep to effect forward movement provocation of the sheep when a sheep backs into any such electrode.

4,265,200
METHOD AND APPARATUS FOR CONTROLLING THE ONSET OF FUEL INJECTION IN DIESEL ENGINES

Wolf Wessel, Oberriexingen, and Gerhard Engel, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,669
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1976, 2653046
Int. Cl.³ F02M *39/00*
U.S. Cl. 123—501 **38 Claims**



1. A method for controlling the timing of fuel injection in a Diesel engine in dependence on external operating conditions, whereby fuel is supplied under pressure from a fuel supply pump to at least one fuel injection nozzle, comprising the steps of:

(a) storing engine operational data in a set-point generating circuit;

(b) sensing at least rpm and load data of the engine and supplying said sensed data to the set-point generating circuit as a result of which the set-point generating circuit generates a set-point value signal determinative of the desired onset of fuel injection:

(c) generating, at a predetermined instant in the crankshaft rotation, a reference value pulse signal in synchronism with the crankshaft rotation;

(d) scanning the operation of the at least one fuel injection nozzle and generating, as an angularly-proportional signal representative of the start of fuel injection, an actual value pulse signal;

(e) generating a set-point value pulse signal from the reference value pulse signal and the set-point value signal;

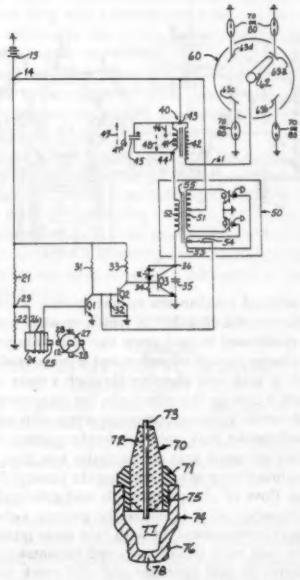
(f) generating a control deviation of the onset of fuel injection relative to the set-point value signal as a function of the reference value pulse signal, the actual value pulse signal and the set-point value pulse signal, said control deviation having a magnitude and algebraic sign determined by the occurrence of the actual value pulse signal and the set-point value pulse signal relative to the reference value signal; and

adjusting the setting of the onset of fuel injection of a final control element in accordane with the magnitude and algebraic sign of the control deviation to thereby reduce the magnitude of the deviation.

4,265,201
STRATIFIED FUEL IGNITION SYSTEM INCLUDING HUMID AIR INJECTION

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 923,828, Jul. 12, 1978, Pat. No. 4,216,412, and a continuation-in-part of Ser. No. 878,792, Feb. 17, 1978, Pat. No. 4,169,445, and a continuation-in-part of Ser. No. 868,118, Jan. 9, 1978, Pat. No. 4,168,692, and a continuation-in-part of Ser. No. 812,912, Jul. 5, 1977, Pat. No. 4,176,647. This application Jul. 20, 1979, Ser. No. 59,465
Int. Cl.³ F02B *23/00*; F02P *1/00*
U.S. Cl. 123—260 **31 Claims**



1. An ignition system having first and second modes of operation, said system being an integral part of an engine

which develops motive power by burning fuel received in a main combustion chamber, comprising the combination of:

an auxiliary combustion chamber, integral with the main combustion chamber, said chambers having a common passageway therebetween, said auxiliary chamber receiving a portion of the fuel;

an electrical igniter, integral with said auxiliary chamber, said igniter having an electrically conductive base and an electrode electrically insulated from said base;

an ignition transformer having a primary winding and a secondary winding coupled to said igniter; and

excitation means, connected to said primary winding, for creating an electrical arc within the auxiliary chamber during the second mode and for creating a bipolar dual amplitude voltage waveform consisting of a first voltage of relatively short time duration and relatively high level as compared with the second voltage of said waveform of relatively lower voltage level and relatively longer time duration than the first voltage, said first voltage initiating an electric field and said arc within the auxiliary chamber and said second voltage sustaining said field and arc for the duration of the second mode, said second voltage also sustaining acceleration of a jet flame of the ignited fuel portion exiting through said passageway into the fuel within the main chamber.

4,265,202

INDUCTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

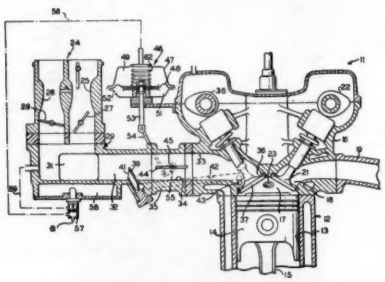
Hiromitsu Matsumoto, Hamamatsu, Japan, assignor to Yamaha Hatsukoki Kabushiki Kaisha, Iwata, Japan

Filed Aug. 29, 1978, Ser. No. 937,703

Claims priority, application Japan, Sep. 3, 1977, 52-106030

Int. Cl.³ F02B *31/00*

U.S. Cl. 123—308 **9 Claims**



1. In an internal combustion engine having a substantially open variable volume chamber in which combustion occurs, a spark plug positioned in said open variable volume chamber for filing a charge in said chamber and a main intake passage communicating with said chamber through a main intake port for delivering a charge therethrough, the improvement comprising a sub-intake passage communicating with said chamer through a sub-intake port, said sub-intake passage having an effective cross-sectional area substantially less than the effective cross-sectional area of said main intake passage for causing a given mass flow of charge through said sub-intake port to enter said chamber at a significantly greater velocity, said sub-intake port communicating with said main intake passage contiguous to said main intake port, said sub-intake port being oriented relative to said chamber and said spark plug for directing charge entering said chamber through said sub-intake port across said spark plug at the time of ignition, and valve means for controlling the ratio of the communication of said ports with said chamber during a given cycle operation of said engine.

4,265,203

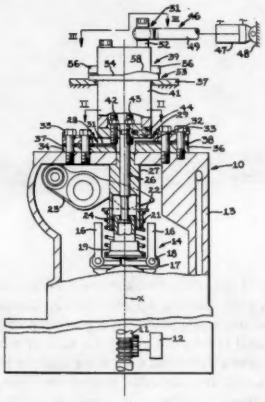
GOVERNOR CONTROL HAVING DUAL POWER SETTINGS

Donald E. Cain, Peoria, Ill., and Nathan Gutman, Simsbury, Conn., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 14, 1979, Ser. No. 11,989

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—367 **8 Claims**



1. In a governor **(10)** having a governor housing **(13)** and a member **(26)** movable in the housing **(13)** for controlling the delivery of fuel to an engine and hence the operating power of the engine, the improvement comprising:

first and second stop means **(28,29)** connected to the housing **(13)** for establishing first and second power settings of the movable member **(26)** of the governor **(10)**, at least one of said first and second stop means **(28,29)** being of a construction sufficient for yielding in response to the governor **(10)** for controlling the lug characteristic and torque rise of the engine; and

means **(39)** connected to the movable member **(26)** and movable therewith for selectively engaging said first and second stop means **(28,29)** in response to said movable member **(26)** moving in an increased fuel direction.

4,265,204

IGNITION CONTROL SYSTEM WITH CLOSURE ANGLE INDEPENDENT OF RESIDUAL ENERGY STORED IN IGNITION COIL

Werner Jundt, Ludwigsburg, and Herman Roozenbeek, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 20, 1979, Ser. No. 50,316

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1978, 2830557

Int. Cl.³ F02D *1/00*

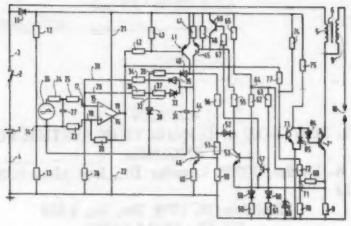
U.S. Cl. 123—418 **5 Claims**

1. In an ignition system having an ignition coil **(6)** having a primary winding **(5)**, electronic interrupter switch means **(7)** connected in series with said primary winding, threshold circuit means **(15)** connected to said electronic interrupter switch means for controlling the operation thereof, and control circuit means for varying the cut-in threshold of said threshold circuit means so that the closure angle of said electronic interrupter switch means varies as a function of engine speed, said control circuit means including integrator circuit means for varying the cut-in threshold of said threshold circuit means in accordance with DC current supplied thereto,

the improvement comprising

means connected to said integrator means and responsive to said current through siad primary winding of said ignition

coil for supplying DC current to said integrator means thereby changing said cut-in threshold of said threshold circuit means only when said current through said primary winding has reached a predetermined minimum value (I_{min}) exceeding the maximum possible residual



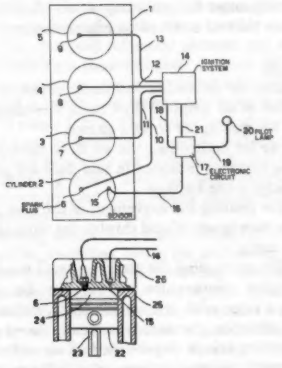
current in said primary winding of said ignition coil when said electronic interrupter switch closes, whereby said variation of said cut-in threshold of said threshold circuit means is independent of residual current present in said ignition coil when said electronic interrupter switch closes.

4,265,205

CONTROLLED IGNITION I.C. ENGINE WITH THERMAL DETECTION SYSTEM

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed Jul. 31, 1979, Ser. No. 62,482
Claims priority, application Italy, Aug. 11, 1978, 26740 A/78
Int. Cl.³ F02P 5/14
U.S. Cl. 123—425 **7 Claims**



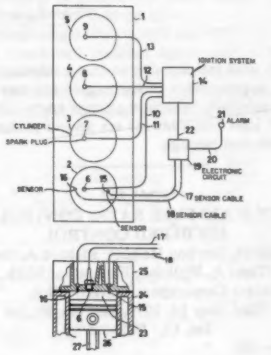
1. A device for checking the overheating phenomena in the interior of the explosion chamber of an internal combustion engine of the controlled-ignition type and equipped with an ignition system for producing an electric discharge at a sparking plug of a cylinder relative to the upper dead center of a respective piston, said device comprising a temperature sensor in the interior of the explosion chamber of at least one of the engine cylinders, said sensor being positioned for contact with exhaust gases while also bonded to a wall of said explosion chamber so as to take a temperature between the average temperature of the gases and the average temperature of said wall, said sensor being also positioned in the explosion chamber in a zone generally farthest from the sparking plug and in which a knock phenomenon first occurs, and an electronic circuit for receiving a signal from said temperature sensor, said circuit comprising a threshold comparator which is capable of evaluating if the sensor temperature is below or above a preselected threshold value and of sending thus a command if said temperature exceeds said threshold value.

4,265,206

DEVICE FOR DETECTING THE KNOCK PHENOMENA IN INTERNAL COMBUSTION ENGINES HAVING A CONTROLLED-IGNITION DEVICE, BASED ON THE USE OF TEMPERATURE SENSORS

Giampaolo Garcea, Milan, Italy, assignor to Alfa Romeo S.p.A, Milan, Italy

Filed Aug. 10, 1979, Ser. No. 65,726
Claims priority, application Italy, Aug. 11, 1978, 26738 A/78
Int. Cl.³ F02P 5/14
U.S. Cl. 123—425 **4 Claims**



1. A controlled-ignition internal combustion engine of the type having a spark plug and a piston for each cylinder, said engine having an ignition system for causing electric discharge at the spark plug with a determined basic regulation of ignition advance relative to the upper dead center of the respective piston, said engine also having a device for detecting the occurrence of the knock phenomenon in an explosion chamber of at least one of the engine cylinders, said device comprising two separate temperature sensors separately arranged in exposed relation in said chamber, one of said sensors being arranged in a zone of said chamber farthest from the spark plug in which generally the phenomenon of incipient knocking is experienced, the other of said sensors being arranged in a zone of said chamber near the spark plug in which said incipient knocking phenomenon does not occur, said device further comprising an electronic circuit for receiving and comparing signals coming from said sensors so as to detect if the engine is operating under knock conditions.

4,265,207

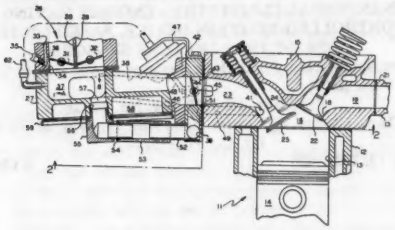
INDUCTION SYSTEM OF FOUR STROKE INTERNAL COMBUSTION ENGINE

Takanori Hayashida, Iwata, Japan, assignor to Yamaha Hatsukoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 28, 1978, Ser. No. 964,156
Claims priority, application Japan, Nov. 30, 1977, 52/142671
Int. Cl.³ F02B 3/00
U.S. Cl. 123—432 **10 Claims**

1. An induction system for an internal combustion engine having a variable volume chamber in which combustion occurs, a charge forming device having a fuel discharge system including a discharge port, and a main induction passage having a plenum for delivering charge therefrom to said variable volume chamber, the improvement comprising an auxiliary induction passage communicating at its downstream end with said variable volume chamber, said auxiliary induction passage

having its inlet disposed in the lower wall of said plenum and in the path of fuel discharge from said charge forming device discharge port for delivering such fuel to said variable volume chamber through said auxiliary induction passage, and valve means for controlling the ratio of communication of the induc-



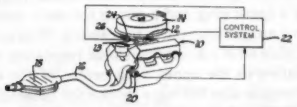
tion passages with the chamber so that a substantial portion of certain load requirements of the engine are served primarily through the auxiliary induction passage and a substantial portion of other load requirements are served primarily through the main induction passage.

4,265,208

CLOSED LOOP AIR-FUEL RATIO CONTROLLER WITH AIR BLEED CONTROL

Philip H. Emmert, Sterling Heights; Richard A. Stevens, Union Lake, and Glenn A. Walkush, Flint, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 16, 1979, Ser. No. 39,330
Int. Cl.³ F02M *7/00*
U.S. Cl. 123—440 **3 Claims**



1. An air/fuel mixture control system for an internal combustion engine having combustion space into which an air/fuel mixture is supplied to undergo combustion and having means defining an exhaust gas passage from the combustion space into which spent combustion gases are discharged, comprising, in combination:

an air/fuel mixture forming assembly effective to supply an air and fuel mixture to the combustion space, the air-fuel ratio of said mixture being substantially less than a predetermined ratio during certain engine operating conditions;

a sensor effective to monitor the exhaust gases in the exhaust gas passage and provide a sensor signal representing at least the sense of deviation of the air-fuel ratio from the predetermined ratio;

a controller responsive to the sensor signal effective to adjust the air-fuel ratio supplied by the mixture forming assembly in amount between rich and lean control limits and direction tending to produce the predetermined air-fuel ratio;

air supply means effective to supply air to the air and fuel mixture upstream of the sensor and independent of the air-fuel mixture forming assembly; and

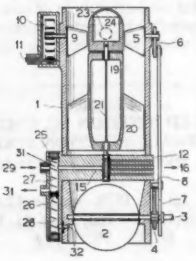
means effective to enable the air supply means to supply air to the air and fuel mixture when the controller adjustment attains a predetermined amount in the mixture leaning direction in response to the sensed rich air-fuel ratio during said certain engine operating conditions to increase the air-fuel ratio to reduce the required controller adjustment of the air-fuel ratio in the leaning direction to thereby effectively increase the adjustment range of the controller in the mixture leaning direction, whereby the controller is prevented from operating at the lean limit in response to the rich air and fuel mixture supplied during said certain engine operating conditions.

4,265,209

FUEL CONTROL AND INJECTION SYSTEM FOR I.C. ENGINES

Willy A. Fiedler, 12758 Leander Dr., Los Altos Hills, Calif. 94022

Filed Jan. 19, 1979, Ser. No. 5,359
Int. Cl.³ F02M *41/00*
U.S. Cl. 123—450 **6 Claims**



1. An arrangement for providing air and fuel to at least one cylinder in an internal combustion engine comprising in combination

a fuel tank,

a tank pump for delivering fuel under pressure,

a controller of air and fuel flow rates, including

a duct for passing air to said engine,

a throttle for controlling the air flow through said duct, vanes movably mounted in said duct for generating air vortices in the air flow,

means for relating the movement of the first of said vanes to the movement of said throttle for varying the air-fuel flow ratio,

means for positioning the second of said vanes in relation to engine temperature for varying the air-fuel flow ratio, a rotor with at least one blade, inclined to the air flow direction, for aerodynamically developing torque around its axis in dependence of air velocity, density and vorticity, spring means elastically restraining said rotor and deflecting to counter torque applied by said rotor,

metering means governed by said rotor for controlling the rate of continuous fuel flow and for dividing it equally if said engine has more than one cylinder,

a regulator for maintaining near-constant differential pressure between the fuel supplied by said tank pump and the air behind said throttle while returning surplus fuel to said fuel tank;

means for transfering fuel from said controller to said engine,

with said cylinder having

an intake port,

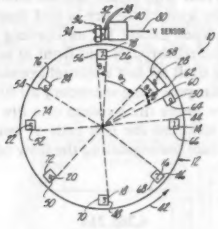
continuous injection means for releasing fuel into said intake port while maintaining pressure,

a fuel line connecting said metering means with said continuous injection means.

4,265,210
ELECTRIC CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

John C. P. Hanisko, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 4, 1978, Ser. No. 948,453
Int. Cl.³ F02D 5/02
U.S. Cl. 123—490 9 Claims



1. An electric control apparatus for providing control signals containing timing and steering information to control electronic fuel injectors of a sequential fuel injection system of an internal combustion engine, said apparatus comprising;

pulse generating means for sequentially generating electrical output pulses throughout each cycle of the engine over a range of engine speeds in synchronism with the revolutions of the engine, said electrical pulses containing a reference pulse for each complete engine cycle,

wherein said pulse generating means includes a rotatable member operatively associated with said engine to rotate in synchronism therewith and having a plurality of spaced sensible elements contained thereon, one of said sensible elements defining a reference element corresponding to said reference pulse and having a recognizable characteristic distinguishing it from the other sensible elements, the distance between said reference element and an adjacent element defining a predetermined distance different than the distance between any two adjacent nonreference elements, and wherein said pulse generating means further includes a single sensor disposed in operative relationship with said rotating member for sensing said spaced sensible elements and providing said electrical output pulses, said pulse processing means detecting said reference pulse in accordance with said recognizable characteristic and the predetermined distance, and

pulse processing means electrically connected to the output of said pulse generating means for processing said pulses, said pulse processing means including comparing means for generating a plurality of first signals indicative of the period of time a particular pulse is present within a variable time period with a second signal indicative of said variable time period and for comparing said first signal with said second signal, said comparing means providing an indication signal indicating the detection of said reference pulse based on said comparison, said particular pulse comprises said reference pulse and said pulse processing means utilizing said indication signal to provide said control signals.

4,265,211
DISTRIBUTORLESS INTERNAL COMBUSTION ENGINE IGNITION SYSTEM

Michael R. Meloeny, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1979, Ser. No. 96,836
Int. Cl.³ F02P 9/00, 3/12, 5/00
U.S. Cl. 123—643 4 Claims

1. A distributorless internal combustion engine ignition system for use with internal combustion engines of the type having at least four cylinders, a spark plug for each cylinder, a piston contained within each cylinder and a crankshaft mechanically coupled to each piston comprising:

means for producing a crankshaft reference signal pulse at a selected reference crankshaft angle relative to the top dead center position of the said pistons of a selected pair of said cylinders;

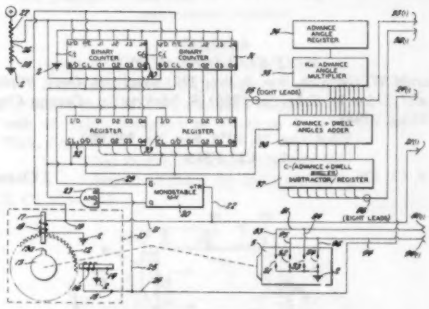
means for producing a predetermined number of crankshaft position signal pulses during each crankshaft revolution;

means responsive to said crankshaft position signal pulses for snythesizing a crankshaft reference signal pulse at the same said selected reference crankshaft angle relative to the top dead center position of the said pistons of each other pair of said cylinders;

means for producing a binary code representation of ignition spark crankshaft angle in crankshaft position signal pulse counts relative to piston top dead center at which an ignition spark event is to occur;

means for producing a binary code representation of ignition dwell in crankshaft position signal pulse counts for all engine speeds;

means for producing a binary code representation of not ignition dwell in crankshaft position signal pulse counts as



determined by the different between the number of said crankshaft position signal pulses occurring during a crankshaft revolution divided by the number of pairs of said cylinders less the sum of said binary code representations of ignition spark crankshaft angle and ignition dwell;

means responsive to said binary code representations of not ignition dwell and of ignition dwell, said crankshaft position signal pulses and said crankshaft reference signal pulses for effecting ignition coil primary winding energization when the number of said crankshaft position signal pulses occurring subsequent to each said crankshaft reference signal pulse is equal to said binary code representation of not ignition dwell and for effecting ignition coil primary winding deenergization when the number of said crankshaft position signal pulses occurring subsequent to each said crankshaft reference signal pulse is equal to the sum of said binary code representations of not ignition dwell and ignition dwell; and

means for directing the ignition spark potential produced upon each ignition coil primary winding deenergization to the spark plugs of the cylinder pair including the cylinder to be fired.

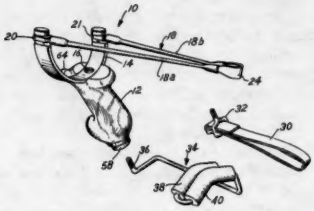
4,265,212
HAND CATAPULT

Rodney A. Wolf, Stevens Point, Wis., assignor to Weber Tackle Company, Stevens Point, Wis.

Filed Jan. 18, 1978, Ser. No. 870,420
Int. Cl.³ F41B 7/00
U.S. Cl. 124—20 A 13 Claims

1. A hand catapult including a handle adapted to be gripped by the hand of the user, handle core means within the handle for mounting attachments to the handle, said handle core

means comprising a longitudinally extending handle core, said handle core being provided with an internally threaded opening in the bottom, a carriage secured to the top of the handle, resilient band means for hurling a missile, swivel carriage

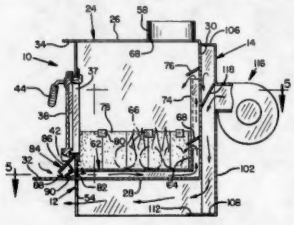


bindings for swivelly connecting the resilient band means to the carriage, and attachments for steadying the hand catapult in use adapted to be selectively secured to the internally threaded opening in the bottom of the handle core.

4,265,213
FREE STANDING STOVE

Garald W. Gorsuch, Rte. 3, Box 292, Sherwood, Oreg. 97140, and Eldon D. Schnelle, 19501 S. McVey La., Oregon City, Oreg. 97045

Filed Aug. 15, 1978, Ser. No. 933,890
Int. Cl.³ F24B *7/04*
U.S. Cl. 126—66 **2 Claims**



1. A stove adapted for location in spaced relation to a wall of a room, said stove comprising:

a metal firebox comprising spaced metal side walls, a top, and a bottom wall forming a substantially closed enclosure for supporting fuel therewithin above the bottom wall of said firebox,

a flue connection opening for removing flue gases from said firebox, a door providing access to said firebox for the deposition of fuel therewithin, and base means for supporting said firebox,

said firebox including a first U-shaped member and a second U-shaped member, wherein said U-shaped members are joined in inverted ninety degree relationship such that one member forms a closure with the other to provide said firebox,

wherein said first U-shaped member forms the side walls including the front of said stove, said front having a door opening provided with said door, and said second U-shaped member forms the top, bottom wall and rear wall of said stove,

said base means extending downwardly from the bottom wall of the second U-shaped member of said firebox,

further including a first air duct extending along the bottom wall of said second member from a first end in communication with an opening in the front of said first U-shaped member for receiving draft air and upwardly adjacent the rear wall of said second member to a second end horizontally adjacent the position of the fire in said firebox, said first duct being closed except for a first opening on the first end thereof extending through said front of said first member and a second opening at said second end for providing draft air to the fire in said firebox,

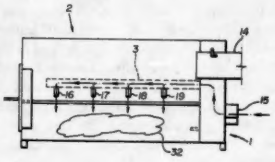
a second air duct extending along the bottom wall of said second member from a first end in communication with an opening in the front of said first member and upwardly adjacent the rear wall of said second member to a second end above the level of the fire in said firebox, said second duct being closed except for an opening at the first end thereof extending through said front of said first member for receiving draft air and a second opening at the second end thereof for providing secondary air for combustion of volatile gases above the location of a fire in said firebox,

and a damper adjacent the first ends of said first duct and said second duct for regulating the flow of draft air therethrough.

4,265,214
HEATER

Henry Rasmussen, P.O. Box 62, Kenora, Ontario, Canada (P9N 3X1)

Filed Apr. 5, 1978, Ser. No. 893,806
Int. Cl.³ F24C *1/14*; F24B *5/00*; F24H *3/00*
U.S. Cl. 126—77 **3 Claims**



1. An apparatus for generating heat by the combustion of solid fuels which comprises:

(a) a combustion chamber in which fuel is to be burned, said combustion chamber having two downwardly and outwardly sloping heat conducting walls for transferring heat from said combustion chamber to the space surrounding the apparatus and at least one other heat conducting wall;

(b) an air heating chamber positioned adjacent said combustion chamber having at least one heat conducting wall located against said other heat conducting wall of said combustion chamber whereby heat may be conducted from said combustion chamber to said air heating chamber;

(c) blower means for drawing ambient air about the apparatus into said air heating chamber;

(d) conduit means communicating with said air heating chamber and said combustion chamber for leading heated air from said air heating chamber to said combustion chamber, the flow of heated air being at a rate to promote the combustion of fuel to be burned in said combustion chamber;

(e) a chimney outlet for evacuating gaseous products of combustion from said combustion chamber, said chimney outlet passing through said air heating chamber;

(f) means for replenishing the supply of fuel to be burned and removing the products of combustion from said combustion chamber;

(g) temperature responsive control means for controlling said blower means and for causing said blower means to cease to operate if there is no fuel in said combustion chamber; and wherein

(h) the portion of said chimney outlet located in said air heating chamber has a small vent therein communicating with said air heating chamber; and

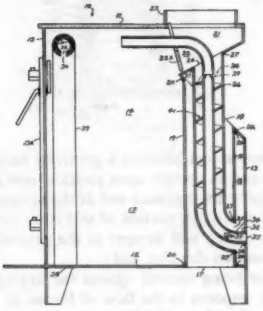
(i) said conduit means is a tube of heat conducting material

communicating from said air heating chamber to said combustion chamber, that part of said tube within said combustion chamber having a plurality of downwardly directed outlets, said tube being so positioned that said outlets are placed above the region within said combustion chamber where combustion of fuel is to occur.

4,265,215
SPACE HEATER

Earle Curry, 116 Purchase St., South Easton, Mass. 02375

Filed Jun. 12, 1979, Ser. No. 47,684
Int. Cl.[3] F24C *1/14, 5/00;* **F24H** *3/00;* **F24B** *3/00*
U.S. Cl. 126—77 **7 Claims**



1. A space heater of the type adapted to be connected to a flue for exhausting flue gases therefrom, comprising in combination:

a combustion chamber having

a fuel burning section,

a rear section,

a top,

a bottom, and

side walls;

said top and said walls being arranged so that the outer surfaces thereof are exposed directly to the (ambient) room air to be heated and

the inner surfaces thereof enclosing said fuel burning section are exposed directly to the heat of the burning fuel and to the flue gases therein and the inner surfaces thereof enclosing said rear section are exposed directly to the flue gases therein and said rear section having

an air inlet port in said bottom and

an air outlet port in said top:

a flue gas chamber having

a chamber outlet port adapted to be connected to said flue and

a chamber inlet port:

a flue passage connecting said fuel burning section and said flue chamber:

a damper in said flue passage adapted to regulate the rate of flow of flue gases therethrough:

an air heating duct in said rear section connecting said air inlet port and said air outlet port in hermetically sealed relation to said bottom and to said top respectively, said air inlet port and said air outlet port being located so that said air heating duct is spaced from the side walls of said rear section, whereby the outer surface of said air heating duct facing said walls enclosing said rear section is exposed directly to the flue gases in the section between said outer surface and said wall and the inner surface of said air heating duct is exposed directly to the air in said air heating duct and thus transfers heat from said flue gases therein to the inner surface of said duct where it is available to heat the air in said duct and cause a convection flow of room air into said inlet port through said air heating duct and through said outlet port into the room space above the stove said air heating duct having a flue gas inlet port located adjacent to said bottom remote from said fuel burning section: a flue duct in said air heating duct connecting said flue gas inlet port in hermetically sealed relation to said air heating duct and to said flue chamber respectively: whereby, the heat in the flue gases flowing through said flue is readily transfered through the wall of said flue duct to the air in said air heating duct:

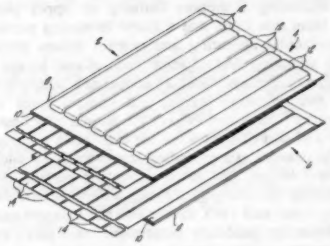
an air supply duct adapted to admit air for combustion into said fuel burning section at a point adjacent to said top and remote from said rear section:

whereby when fuel is burning in said fuel burning section, the flue gases are drawn around said air heating duct into and through said flue duct to be exhausted through said flue chamber and chamber outlet port into said flue, (.), and when said damper in said flue duct is in its open position, part of the flue gases in said combustion chamber flow through said flue passage to said flue and the other portions of said flue gases flow through said flue duct to said flue and when said damper in said passage is in its closed position, all of said flue gases in said combustion chamber flow from said combustion chamber through said flue passage to said flue.

4,265,216
SELF-CONTAINED EXOTHERMIC HEAT RECOVERABLE CHEMICAL HEATER

Larry J. Marshall, Menlo Park, and Phillip C. Jensen, Fremont, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Dec. 6, 1978, Ser. No. 967,029
Int. Cl.[3] F24J *1/00;* **B65D** *25/08*
U.S. Cl. 126—263 **18 Claims**



1. A self-contained heat recoverable exothermic chemical heater comprising:

a first and a second heat bag, each of said heat bags including a heat recoverable sheet having a plurality of separate compartments therein and a rupturable barrier sheet bonded to the rear of each heat recoverable sheet, thereby enclosing all of said compartments, said compartments having a continuous strip of adhesive placed between adjacent compartments to form a bond between said heat recoverable sheets and said rupturable barrier sheets which seals each of said compartments, each of said rupturable barrier sheets having a plurality of integrally extending tear strips, each of said tear strips being positioned lengthwise over a compartment and having a portion thereof which extends outwardly from one end of said heater, said first and second heat bags being joined together such that said rupturable barrier sheets separate said heat bags and the compartments in the heat recoverable sheet of the first heat bag overlap the compartments in the heat recoverable sheet of the second heat bag, said rupturable barrier sheets providing access to each pair of overlapping compartments by removing said tear strips;

a first chemical means disposed in each compartment of said first heat bag;

a second chemical means disposed in each compartment of said second heat bag which reacts with said first chemical means to produce heat when mixed by removing said tear strips, said adhesive bond between adjacent compartments disintegrating as the heat produced increases until said bond is released;

means for sealing the end of said chemical heater from which said tear strips are removed to prevent escape of said first and second chemical means.

4,265,217

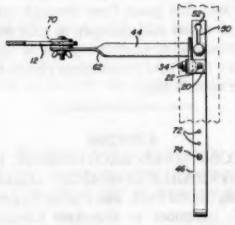
REMOTE FIREPLACE DAMPER CONTROL

Louis W. Flaherty, and Harold H. Huber, both of No. 4-7th St. South, Great Falls, Mont. 59401

Filed May 25, 1979, Ser. No. 42,497

Int. Cl.³ F23L *13/02*

U.S. Cl. 126—288 **10 Claims**



1. A damper control for a fireplace including a fireplace opening upper limit defining lintel and a downwardly extending damper lever whose lower end is shiftable toward and away from the lintel from within the fireplace, said damper control including a support defining an upper portion for support from said lintel and a lower mounting portion, elongated horizontal operating and control levers, pivot means pivotally attaching first adjacent ends of said levers together for relative oscillation about a vertical axis transverse to said control and operative levers, said control lever including means on the remote end thereof for pivotal attachment to the lower end of said damper lever for oscillation relative thereto about a horizontal axis extending transversely of said damper and control levers, said lower mounting portion defining a guide opening therethrough through which the first end of said operating lever, said pivot means and the adjacent end of said control lever are guidingly projectable, said pivot means including means enabling limit longitudinal shifting of said operating lever relative to said vertical axis and control lever, whereby said operating lever may be longitudinally displaced through said opening, swung horizontally to a position disposed at generally right angles relatively to said control lever and then longitudinally shifted relative to said vertical axis and said control lever to a position spanning said guide opening through which the adjacent end of said control lever extends.

4,265,218

FAILSAFE PROTECTION DAMPER FOR A FIREPLACE FURNACE

John H. Agee, Fremont, Nebr., and Marshall D. Albert, Woodbine, Iowa, assignors to American Road Equipment Co., Omaha, Nebr.

Filed Nov. 14, 1979, Ser. No. 94,220

Int. Cl.³ F23L *3/00*

U.S. Cl. 126—288 **13 Claims**

1. A fireplace furnace comprising,

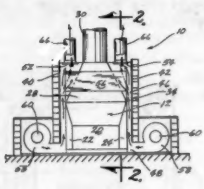
a firebox adapted for burning combustible fuels therein,

flue means in communication with said firebox for exhausting combustion gases therefrom,

an outer housing partially surrounding said firebox and spaced therefrom to define a heat chamber therebetween, said outer housing including an air intake opening through a lower portion thereof for supplying intake air to said heat chamber and first and second heat outlets through an upper portion thereof, said second heat outlet including a generally vertical duct means having an entrance end in communication with said heat chamber,

a power actuated blower associated with said intake opening for forcing air into said intake opening, through said heat chamber and outwardly through said first and second heat outlets,

a damper supported within said vertical duct means for



pivotal movement between a generally horizontal closed position and an upright open position, said damper being positioned at the entrance end of the vertical duct means adjacent said upper portion of said outer housing,

bias means urging said damper to the generally horizontal closed position therefor, and

said damper being opened against the urging of said bias means in response to the flow of forced air through said heat chamber by said blower whereby said damper is closed by said bias means when power to the blower is cut off.

4,265,219

SOLAR HEATING (COOLING) SYSTEM

Harry E. Thomason, 609 Cedar Ave., Fort Washington, Md. 20022

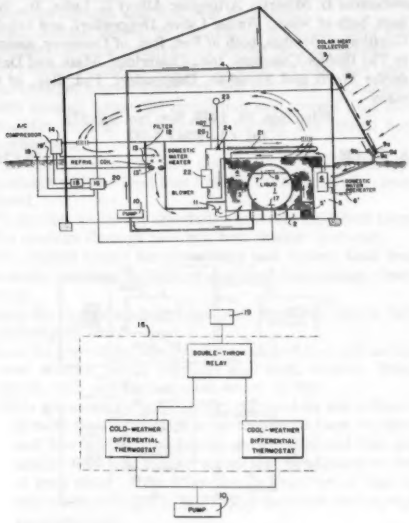
Continuation of Ser. No. 926,527, Jul. 20, 1978, abandoned, which is a division of Ser. No. 398,323, Sep. 18, 1973, Pat. No. 4,102,327. This application Aug. 14, 1979, Ser. No. 66,497

Int. Cl.³ F24J *3/02*; F24D *11/00*; G05D *23/00*

U.S. Cl. 126—419 **7 Claims**

1. Heat storage and solar heat collecting apparatus, means to transfer heat from said collecting to said storage apparatus, control means to operate said transfer means comprising a first sensor responsive to temperatures in said storage apparatus and a second sensor responsive to temperatures in said collecting apparatus, said first and second sensors comprising means to activate said control means to start said transfer means when the temperature in the collecting apparatus exceeds that in storage by a first differential, third sensor means connected to said control means to activate it to start said transfer means when the temperature in the collecting apparatus exceeds that

in storage by a second differential wherein said third sensor means is responsive to ambient temperatures to automatically



switch to said first differential or to said second differential responsive to ambient temperatures.

4,265,220

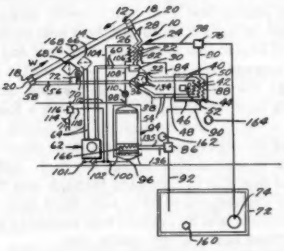
MULTIPLE FLUID MEDIUM SYSTEM AND IMPROVED HOT WATER SUPPLY TANK ASSEMBLY UTILIZED THEREIN

Roy E. McAlister, 5285 Red Rock North, Phoenix, Ariz. 85018

Filed Apr. 23, 1979, Ser. No. 32,636

Int. Cl.[3] F24J *3/02*; **G05D** *23/00*; **F25B** *27/00*

U.S. Cl. 126—421 **7 Claims**



1. A multiple fluid medium energy conversion system for a building comprising

radiant energy panel means for mounting exteriorly of the building having passage means for directing a flow of air therethrough and means for enabling (1) environmentally available solar energy to heat the flowing air and (2) the flowing air to give up heat to the environment when solar energy is not available and temperature conditions are favorable therefor,

interior room air temperature conditioning means for mounting interiorly of said building including return air inlet means for receiving room air to be temperature conditioned, room air outlet means for discharging a supply of temperature conditioned air and blower means for effecting a flow of room air from said return air inlet means to said room air outlet means,

first heat exchanger means including first flow path means for the air flowing from said return air inlet means to said room air outlet means and second and third flow path means in heat exchange relation to said first flow path means,

second heat exchanger means having fourth flow path means connected in series with said panel passage means and fifth flow path means in heat exchange relation to said fourth flow path means,

means defining a conditioned temperature storage water circuit including insulated water storage tank means, pump means for pumping water from said storage tank means and water return means for directing water into said storage tank means, and means for directing water from said pump means to said water return means alternatively (1) through said third flow path means or (2) said fifth flow path means,

means defining a closed air flow circuit through said panel passage means and said fourth flow path means in series therewith and through said second flow path means including means for alternatively (1) compressing the air from said panel passage means into said second flow path means and expanding the air from said second flow path means into said fourth flow path means or (2) compressing the air from said fourth flow path means into said second flow path means and expanding the air from said second flow path means into said panel passage means, and

means defining an environmental air circuit through said panel passage means and said fourth flow path means in series therewith including environmental air inlet means, environmental air outlet means and blower means for causing a flow of air from said environmental air inlet means through said panel passage means, said fourth flow path means and into said environmental air outlet means.

4,265,221

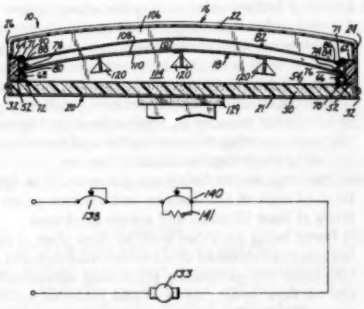
SOLAR ENERGY COLLECTOR ASSEMBLY AND METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF A TRANSFER MEDIUM

Lewis A. Whinnery, Huntsville, Ala., assignor to Kendon Concepts, Excelsior, Minn.

Continuation-in-part of Ser. No. 914,572, Jun. 9, 1978, abandoned. This application Mar. 26, 1979, Ser. No. 23,843

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—422 **42 Claims**



1. A solar energy collector assembly comprising:

an outer enclosure having a light transparent major face adapted to face a light source and a plurality of walls extending rearwardly from said major face;

a single collector plate secured in said enclosure spaced from and rearward of said major face, said collector plate having a single curvilinear, outwardly facing, convex config-

uration with a large radius of curvature and an outer convex surface adapted to face a light source and an opposite inner surface, said collector plate extending over an area substantially equal to the area of said transparent major face of said outer enclosure;

a rear panel assembly having an inner and an outer surface, said rear panel assembly being attached to said enclosure rearward of said collector plate to form an enclosed heating chamber between said inner surface of the rear panel assembly and said inner surface of the collector plate; and

inlet and outlet means communicating with said heating chamber for passing a transfer medium through said heating chamber.

4,265,222

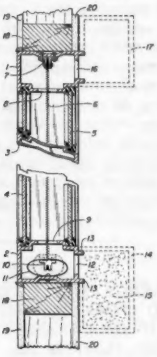
SEE-THROUGH SOLAR COLLECTOR

Narinder S. Kapany, 2126 Greenways Dr., Woodside, Calif. 94061, and Fred C. Unterleitner, 3732 Grove Ave., Palo Alto, Calif. 94303

Continuation-in-part of Ser. No. 933,513, Aug. 14, 1978, abandoned. This application Aug. 14, 1978, Ser. No. 933,513

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—431 **9 Claims**



1. A see-through building facade module for use in a wall of a room in a building comprising:

a frame adapted to be mounted in said wall;

interior and exterior transparent parallel panes mounted within said frame to define an air space therebetween;

a louvered radiant solar energy absorbing screen centrally located within said air space and coextensive with the area of said panes, said louvered screen being characterized by a screen thickness, said louvered screen having louvers sloping downward toward said exterior pane, the vertical separation of individual louvers being sufficiently small so as to subtend no more than approximately 2 arc minutes at the mean viewing distance within said room said louvers including an absorptive coating thereon;

said louvered screen being spaced apart from the nearest faces of each of said interior and exterior panes by a distance at least 10 times said screen thickness;

said frame being provided with air flow slots at its top and bottom to establish an upward flow through said air space, said small louver spacing promoting substantially turbulent air flow in the region of said louvered screen to promote effective heat transfer from said louvered screen to said flowing air in the vicinity of said louvered screen, said separation of at least 10 times said thickness preventing said region of turbulence from extending to said interior and exterior panes, thus allowing laminar flow proximate said panes to reduce heat transfer through said panes, thus providing effective heat collection and effective shielding of said room.

4,265,223

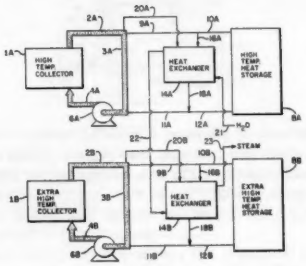
METHOD AND APPARATUS FOR UTILIZING SOLAR ENERGY

Constantine D. Miserlis, Arlington; Albert G. Luke, Jr., Stoneham, both of Mass.; Walter Laber, Deggendorf, and Friedrich Guetlhuber, Metten, both of Fed. Rep. of Germany, assignors to The Badger Company, Inc., Cambridge, Mass. and Deffendorfer Werft und Eisenbau, Deggendorf, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,373

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—435 **25 Claims**



1. A process for utilizing solar energy comprising at least two different cycles of operation as follows:

(a) during periods of sunlight, absorbing solar energy in a collector characterized by first and second solar energy-absorbing heat exchangers of the type through which a fluid heat transfer medium may be circulated, continuously passing first and second fluid heat transfer media in a first direction through said first and second heat exchangers so as to pick up heat therefrom, continuously passing the heated first fluid heat transfer medium from said first heat exchanger through a third heat exchanger so as to give up heat to said third heat exchanger and through a first heat storage reservoir so as to store heat in said first heat storage reservoir, continuously passing the heated second fluid heat transfer medium through a fourth heat exchanger so as to give up heat to said fourth heat exchanger and through a second heat storage reservoir so as to store heat in second heat storage reservoir, and passing a third fluid heat transfer medium through said third and fourth heat exchangers so that said third heat transfer medium recovers heat by indirect heat exchange with said first and second heat transfer media; and

(b) during periods when the sun's rays are substantially occluded, continuously passing heated first fluid heat transfer medium for said first heat storage reservoir through said first solar energy-absorbing heat exchanger and said third heat exchanger so as to give up heat to said first and third heat exchangers, and continuously passing heated second fluid heat transfer medium from said second heat storage reservoir through said second solar energy-absorbing heat exchanger and said fourth heat exchanger so as to give up heat to said second and fourth exchangers.

14. A system for utilizing solar energy comprising:

a solar energy collector adapted to receive solar energy and having at least first and second solar energy-absorbing heat exchangers of the type through which a fluid heat transfer medium may be circulated;

at least third and fourth heat exchangers of the type through which a fluid heat exchange medium may be circulated;

first conduit means for circulating a first fluid heat tranfer medium through said first heat exchanger;

second conduit means for circulating a second fluid heat transfer medium through said second heat exchanger;

third conduit means for circulating said first fluid heat transfer medium between said first and third heat exchangers;

fourth conduit means for circulating said second fluid heat transfer medium between said second and fourth heat exchangers;

at least first and second heat storage reservoirs of the type through which a fluid heat transfer medium may be circulated;

fifth conduit means for circulating said first fluid heat transfer medium through said first heat storage reservoir;

sixth conduit means for circulating said second fluid heat transfer medium through said second heat storage reservoir;

means for removing heat from said third and fourth heat exchangers; and

means for controlling the circulation of said first and second heat transfer media through said first, second, third, fourth, fifth and sixth conduit means so that

(1) in the event the solar energy received by the collector is more than is required to be recovered from the third and fourth heat exchangers, the flow of said first and second fluid heat transfer media may be adjusted so that at least some of the solar energy absorbed as heat by said media is stored in said first and second heat storage reservoirs, and

(2) in the event the solar energy received by the collector provides insufficient heat for the third and fourth heat exchangers, the flow of said first and second fluid heat transfer media may be altered so as to remove heat from said first and second heat storage reservoirs respectively and deliver said heat to said first and second and third and fourth heat exchangers respectively.

24. A system for collecting solar energy and using it to heat a working fluid, said system including:

at least one heliostat for reflecting an incident beam of radiant solar energy;

an energy receiver for receiving an incident beam of radiant solar energy reflected by said at least one heliostat and converting said received solar energy to heat, said receiver including first and second heat exchangers adapted to conduct a heat exchange fluid along a selected path in said receiver so as to absorb heat from solar energy striking the receiver;

an output heat exchanger comprising at least a steam generator section and a steam superheater section;

a heat storage section comprising first and second tanks each adapted to store a hot fluid heat transfer medium so as to substantially prevent loss of heat from said medium;

first conduit means connecting said first heat exchanger with said steam generator section and said first tank so as to form a first circuit for circulating a fluid heat transfer medium;

second conduit means connecting said second heat exchanger with said steam superheater section and said first tank so as to form a second circuit for circulating a fluid heat transfer medium;

a first fluid heat transfer medium in said first tank, said first heat exchanger, said steam generator section and said first conduit means;

a second fluid heat transfer medium in said second tank, said second heat exchanger, said steam superheater section and said second conduit means;

pump means for circulating a fluid heat transfer means through said first and second circuits; and

means for controlling circulation of said first and second fluid heat transfer media whereby (a) during periods of uninterrupted and high intensity sunlight said first and second heat transfer media are circulated so that heat is recovered in said first and second heat exchangers, heat is given up in said steam generator section and said steam superheater section, and heat is stored in said first and second tanks and (b) during periods of darkness said first and second heat transfer media are circulated so that heat is retrieved from said first and second tanks and given up in said first and second heat exchangers, said steam generator and said steam superheater.

4,265,224

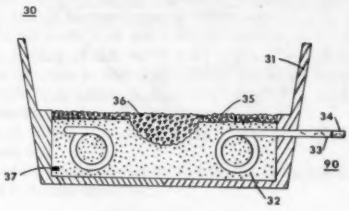
MULTI-STAGE SOLAR STORAGE SYSTEM

Stanley A. Meyer, U.S. Post Office Tri-Village Station, Columbus, Ohio 43212

Filed Apr. 7, 1980, Ser. No. 138,144

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—436 **10 Claims**



1. A multi-stage solar storage system comprising in combination:

an enclosure,

a capping lens positioned in the uppermost region of said enclosure, said capping lens comprising an upper lens partition superimposed over an lower lens partition divided in spaced relationship to form an thermal-insulated air-cavity;

a low-energy conversion/storage section positioned in the lowermost region of said enclosure comprised of material having a high rate of absorption to solar radiant energy to thereby convert said solar radiant energy to thermal radiant energy;

a high-energy conversion/storage section positioned within said enclosure intermediate of said capping-lens and said low-energy conversion/storage section, said high-energy conversion/storage section comprised of material having a high rate of absorption to solar radiant energy to thereby convert said solar radiant energy to thermal radiant energy, and said high-energy conversion/storage section further comprising a solar-energy transmittal aperture;

a light-shutter positioned in the center of said capping-lens, said light-shutter comprising an array of rotating deflection vanes reflective to incident light rays;

said enclosure further comprising a thermal-insulated air/-liquid tight outer liner positioned around said high and low energy conversion/storage sections, said outer liner thereby thermal-sealed against said capping-lens; and

multi-utilization means for utilizing said thermal energy in said high and low energy conversion/storage sections.

4,265,225

SOLAR COLLECTOR ELEMENT

Ernst Berger, Altdorf, and Norbert Herwegh, Schattdorf, both of Switzerland, assignors to Datwyler AG.Schweiz, Kabel-, Gummi- und Kunststoffwerke, Altdorf, Switzerland

Filed Dec. 6, 1978, Ser. No. 967,026

Claims priority, application Switzerland, Dec. 9, 1977, 15160/77

Int. Cl.³ F24J *3/02*; F28F *9/02*

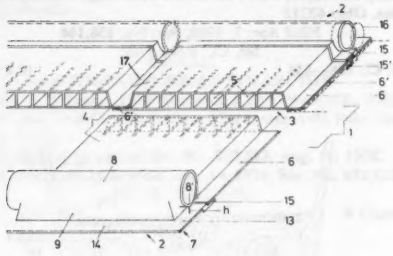
U.S. Cl. 126—445 **5 Claims**

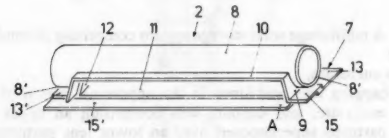
1. In a solar energy collector element of the type comprising an absorbing layer member having a plurality of internal channels for circulating a heat transport medium and a header

member fastened at each open end of the absorbing layer member to supply the transport medium to the internal channels and collect it, an improved header member which permits at least two solar elements to be assembled together as a composite unit, said header member comprising:

a base plate;

a plurality of projections attached to one side of said base plate, each said projection being oppositely displaced in relation to the other with respect to the plane of said base plate, each said base plate and projections acting together





with the base plate and projections of an adjacent header member to join any number of solar elements as a continuous watertight sheet;

a tube saddle fixed to said base plate; and

a header tube fixed upon and opening into the interior of said tube saddle, said header tube resting on said saddle at a predetermined height spaced above the plane of said base plate and forming with said saddle a longitudinal channel opening which extends substantially for the length of said header tube.

4,265,226

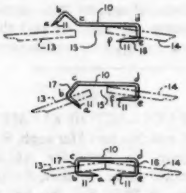
INCISION CLOSING METHOD

Khalil A. I. Cassimally, 403 Hayes Rd., Fort Pierce, Fla. 33450

Filed Mar. 23, 1979, Ser. No. 23,262

Int. Cl.[3] A61B *17/08*; F16B *15/00*; B25C *5/00*

U.S. Cl. 128—1 R **1 Claim**



1. A method of closing an incision with a deformable clip, said clip initially comprising a hook portion which extends into a shank portion such that the whole is generally J-shaped, said clip having tissue piercing portions at the free ends of said hook and shank portions whereby the closing of said incision comprises:

piercing the tissue adjacent one side of said incision with the piercing portion of said hook portion,

inserting said hook portion in said tissue and thereby holding same,

deforming said shank portion so as to pierce the tissue adjacent the opposed side of said incision with the piercing portion of said shank portion,

further deforming said shank portion such that said clip is transformed to be generally C-shaped;

said further deformation of said shank acting to gather said opposed tissues and thereby close the incision.

4,265,227

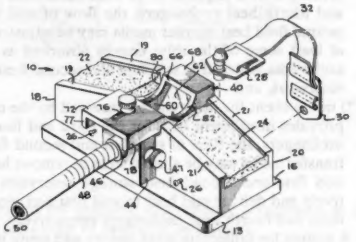
INFANT EXTREMITY POSITIONER AND ILLUMINATOR

Walter Ruge, Tampa, Fla., assignor to The Hospital and Welfare Board of Hillsborough County, Fla.

Filed Oct. 3, 1979, Ser. No. 81,580

Int. Cl.[3] A61B *1/06*

U.S. Cl. 128—23 **9 Claims**



7. An illuminator for providing high intensity light to an extremity of an infant comprising support and restraining means for receiving and restraining against movement an extremity to be illuminated, said support and restraining means including a base member, first and second support blocks mounted in spaced relation on said base member and each having an upper surface, flexible restrainer straps attached to said support blocks and extending over said upper extremity supporting surfaces; a light directing housing including means defining an extremity receiving and positioning aperture in the upper portion of said light directing housing dimensioned to partially receive the portion of the extremity to be illuminated, said light directing housing being positioned between said support blocks and said extremity receiving and positioning aperture in said light directing housing is of adjustable width and is defined on two sides by first and second downwardly curved upper surfaces on two opposed side walls of said light directing housing, a curved edge on a fixed top plate, a curved edge on an adjustable top plate spaced from said fixed top plate and first and second downwardly extending flanges along opposite sides of the adjustable top plate, said downwardly extending flanges having forwardly and downwardly extending protrusions extending alongside said two opposed side walls to cooperate with said downwardly curved upper surfaces thereof to define two variable length sides of said downwardly extending extremity receiving and positioning aperture; a light source positioned externally of said light directing housing; a light conduit extending between said light source and said light directing housing; for reflector means in said light directing housing for directing light from the light conduit upwardly through said extremity positioning and receiving aperture to illuminate an extremity when positioned therein.

4,265,228

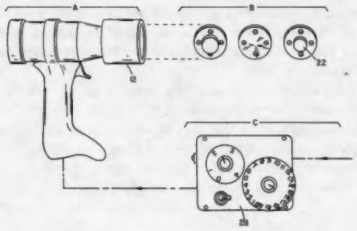
MECHANICAL PACEMAKER

Paul M. Zoll, 261 Brookline St., Newton, Mass. 02192

Continuation of Ser. No. 942,363, Sep. 14, 1978, abandoned, which is a continuation of Ser. No. 802,135, May 31, 1977, abandoned. This application Aug. 17, 1979, Ser. No. 67,411

Int. Cl.[3] A61H *23/00*

U.S. Cl. 128—55 5 Claims



1. A mechanical pacemaker for contacting the chest to provide cardiac stimulation, comprising:

a housing having a chest-contact surface, and a cavity with an opening in said chest-contact surface;

an impact surface on one end of a plunger slidably mounted within said cavity such that a travel path for said impact surface is defined,

said path extending outside said housing and through said opening and said impact surface being located outside of said housing at one end of said travel path and inside said housing at the other end of said path,

said impact surface being shaped and sized to achieve deformation of the chest when travelling outside said housing;

an impact means for driving said impact surface in discrete impacts that make and break contact with the chest,

said impact means being operably connected to said impact surface by said plunger,

said impacts being of a predetermined reproducible energy delivery selected to fail within an energy range, the lower end of said range being sufficiently high to achieve cardiac stimulation and the upper end being sufficiently low to avoid causing intolerable pain; and

an electronic circuit means for actuating said impact means in response to the electrical output of a cardiac monitor, said actuation being synchronized to occur in a desired phase relation with the heart beat, to thereby produce a desired electrical ventricular response to the mechanical impacts.

4,265,229

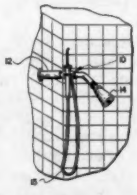
ORAL HYGIENE APPARATUS FOR SHOWERS

Harold E. Rice, 1128 Dover Dr., and N. Ray Neel, 1104 Dover Dr., both of Provo, Utah 84601

Filed Aug. 29, 1979, Ser. No. 70,781

Int. Cl.[3] A61H *9/00*

U.S. Cl. 128—66 7 Claims



1. An oral hygiene apparatus adapted to be interconnected between a water outlet pipe and a shower head which comprises,

(a) a hollow valve body open at each end for passing water from said outlet pipe to said shower head,

(b) a lateral bottom opening in said valve body for diverting water away from said shower head having valve seating means in the inside of the valve body at said opening and an outwardly protruding nipple on the outside of said valve body surrounding the lateral bottom opening and forming a continuation thereof,

(c) a valve needle threaded through the valve body opposite the lateral bottom opening and extending into said hollow valve body, said valve needle having a pointed inner end adapted to seat into said valve seating means and seal the lateral bottom opening when said valve needle is threaded completely across said hollow valve body and adapted to control the pressure and amount of water passing through said lateral bottom opening when said valve needle is threaded away from said seating means and into the hollow portion of the valve body without preventing the flow of water to said shower head said valve needle also containing an enlarged outer end outside said valve body to facilitate turning of said needle valve;

(d) hose means connected to said outwardly protruding nipple and

(e) an oral hygiene applicator attached to the opposite end of said hose said applicator.

4,265,230

TRACTION SPLINT

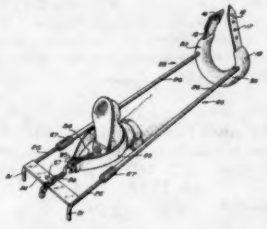
Donald A. Jordon, 3 Kenleigh Grove, Armadale, Victoria, Australia

Filed Jun. 22, 1979, Ser. No. 51,336

Claims priority, application Australia, Jul. 11, 1978, PD5030

Int. Cl.[3] A61F *5/04*

U.S. Cl. 128—87 R 7 Claims



1. A traction splint comprising:

(a) a thrust member sidewardly applicable to the proximal end of a patient's limb, and, adapted, when so applied, to bear against the patient's trunk at that proximal end, said thrust member comprising a strap furnished with means to join the strap ends together and having a tubular body portion, and a stiff but flexible means housed within said body portion which renders the thrust member substantially straight and stiff to facilitate its application to said patient's limb from the side and yet flexible enough to be easily brought to ring-form around the limb,

(b) a U-shaped caliper including length adjustable side members able to flank a broken limb longitudinally and on either side thereof, with the caliper crotch spaced from the distal end of the patient's limb,

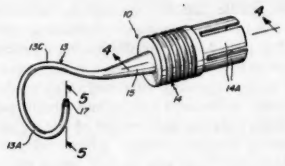
(c) means to locate and retain location of the free ends of said side members in relation to said thrust member, and

(d) tension means able to take hold of the distal end of a patient's limb which has said caliper and said thrust member applied thereto as aforesaid, and adapted for attachment to said caliper crotch thereby to exert a degree of tension on the patient's limb.

4,265,231
CURVED DRILL ATTACHMENT FOR BONE DRILLING USES

Arnold D. Scheller, Jr., 181 Essex St., North Quincy, Mass. 02171, and Thomas B. Quigley, 99 Pond Ave., Brookline, Mass. 02146

Filed Apr. 30, 1979, Ser. No. 34,452
Int. Cl.³ A61F *5/04, 17/32;* **E21B** *7/04, 7/08*
U.S. Cl. 128—92 E **11 Claims**

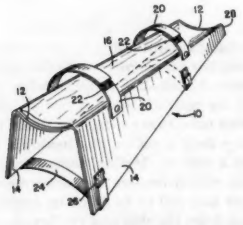


1. A drilling attachment for a drill motor having rotatable means operable to grip or release a burr or drill, said attachment for use in surgical procedures requiring a passageway through bone with the ends of the passageway not in alignment, said attachment including a rigid cannula including a proximal end portion a having a longitudinal axis, said proximal end portion being attachable to the housing of a drill motor and freely receptive of the gripping means thereof, a curved intermediate portion of said cannula extending radially with respect to said longitudinal axis, and a curved distal portion of said cannula lying in a plane which is perpendicular to said longitudinal axis of said proximal portion and substantially concentric with respect to said axis, a bone-cutting burr exposed at the distal end of said distal portion, and a burr-rotating flexible shaft within said cannula, said shaft being anchored to said burr at said distal end and attached to a rod at said proximal end, which rod is connectable to said rotatable gripping means of said drill motor, whereby said drilling attachment and said burr are dimensioned in such fashion that when used a passageway is provided through a bone appropriate for the passage of a curved surgical needle therethrough.

4,265,232
INCLINED ARM SUPPORT FOR STROKE VICTIMS

Timothy Stonich, 1518 Spencer, Wilmette, Ill. 60091

Filed Jul. 2, 1979, Ser. No. 53,966
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—133 **5 Claims**



1. A portable arm rest adapted to be easily transported and carried by stroke victims to position the user's forearm in a position with the hand elevated above the elbow to prevent the accumulation of fluids in the hand and wrist area and the portable arm rest being adapted for mounting and positioning upon a stationary object such as a table, arm of a chair or the like, the improvement comprising:

an arm support section adapted to receive the stroke victim's forearm and position the person's hand above his or her elbow;

said arm support section having a concave curvature providing a dish-shaped cross section having sides located above a lower, central portion;

said arm support having a length less than twenty inches to support a person's forearm and receive the elbow and hand along the length of the support;

support legs extending from the contoured support section and having means adapted to dispose the arm support section at an acute angle of at least twenty degrees above horizontal;

connecting means extending across the bottom of the support legs and providing means adapted to support the unit on a flat, horizontal surface as well as on a contoured or irregular surface;

arm support straps extending from side to side atop the contoured arm support section and providing a first strap adapted to secure the user's wrist and a second strap to secure the forearm area near the user's elbow;

said support legs having means for easily storing a plurality of arm rests in a compact configuration.

4,265,233
MATERIAL FOR WOUND HEALING

Akio Sugitachi, Koube; Kunihiko Takagi, Kyoto, and Yasunori Yabushita, Yamatotakada, all of Japan, assignors to Unitika Ltd., Amagasaki, Japan

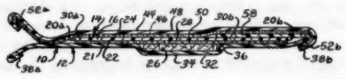
Filed Apr. 6, 1979, Ser. No. 27,637
Claims priority, application Japan, Apr. 12, 1978, 53/43466; Oct. 24, 1978, 53/131116
Int. Cl.³ A61F *13/00*
U.S. Cl. 128—156 **24 Claims**

1. A wound healing material capable of effectively promoting the formation of stabilized fibrin at a wound site over a long period of time, said material comprising a structure having a substance fixed thereto, said substance consisting essentially of blood coagulation Factor XIII.

4,265,234
DRESSING COMPOSITE

Charles H. Schaar, Lake Zurich, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Nov. 14, 1979, Ser. No. 93,956
Int. Cl.³ A61F *15/00*
U.S. Cl. 128—156 **10 Claims**



1. A dressing composite, comprising:

a bandage comprising a backing sheet having a back surface facing away from a patient after application of the bandage, a front surface facing toward the patient after application of the bandage, an absorbent pad located over the front surface of said backing sheet and intermediate opposed ends of the backing sheet, and an adhesive covering a substantial portion of the front surface of the backing sheet intermediate said pad and the opposed ends of the backing sheet; and

a package comprising a front cover sheet extending the length of the bandage, and having a width greater than the width of the bandage backing sheet, with oppposed side margins of the front cover sheet extending past opposed sides of the bandage, and an inner release surface releasably attached to the exposed adhesive of the bandage, and a back cover sheet extending the length of the bandage, and having a width greater than the width of the bandage backing sheet, with opposed side margins of the back cover sheet extending past opposed sides of the bandage, an adhesive on the back cover sheet extending along the side margins of the back cover sheet and being releasably

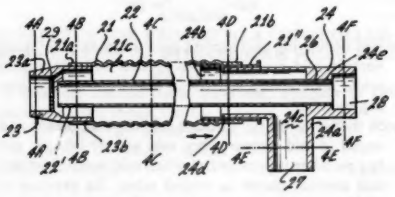
attached to a release surface on the facing side margins of the front cover sheet, and means for releasably attaching said front and back cover sheets together adjacent at least one end of the bandage, the adhesive on the back cover sheet includes a substantial portion on a front surface of the back cover sheet releasably attached to the back surface of the backing sheet and a portion on the front surface of the back cover sheet side margins releasably attached to the facing inner release surface of the front cover sheet side margins, said back cover sheet being free of attachment from the back surface of the bandage backing sheet in an elongated region extending from the other end of the bandage toward the one end of the bandage.

4,265,235

ANESTHETIC SYSTEM

Atsuo F. Fukunaga, 13139 Bryson St., Arleta, Calif. 91331

Filed May 11, 1979, Ser. No. 38,319
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—200.24 **9 Claims**



1. A unilimb device for use in a breathing circuit wherein inspiratory gas from a source thereof is delivered through inlet means to a person's respiratory system, and expiratory gas exhaled by the person passes back through said inlet means, said device comprising:

A. first flexible tube means of such internal diameter as to pass the required volume of gas at the required rate from the source thereof to said inlet means to provide inspiration for the person, and said first flexible tube having a predetermined external diameter;

B. second flexible tube means enclosing most of the length of the first flexible tube, means said second flexible tube means being of such internal diameter greater than the predetermined external diameter of the first flexible tube means as to provide a sufficient cross-sectional area of passage between the first flexible tube means and the enclosing second flexible tube means to pass expiratory gas from the person at the required rate;

C. first terminal element means, said first terminal element means being generally tubular in configuration, short in length, and having one open nozzle end for communication with said inlet means, and an opposite open end including means for receiving and gripping a first end of the second flexible tube means and to dispose it close to the open nozzle end; said first terminal element means having a tubular wall defining a passage therethrough, a first end of the first flexible tube means being unattached to said second flexible tube means amd said first terminel element means and extending axially toward said open nozzle end, and means within said first terminal element means for limiting the axial extension of said first end of the first flexible tube means toward said open nozzle end, to provide a passage for expired first end of said flexible tube means said open nozzle and said gas passage;

D. second terminal element means comprising a wall defining a cavity and first, second and third openings to said cavity,

said second terminal element means having a tubular extension defining said first opening including means for receiving and gripping the second end of the second end of the second flexible tube means, said tubular extension defining said first opening having an inner diameter larger than the outer diameter of said first flexible tube means;

said second opening being disposed opposite said first opening, said second opening including means for receiving and securely gripping the second end of the first flexible tube means, when said first flexible tube is inserted through said first opening, through said cavity into said receiving and gripping means thereby placing said first tubular means in direct communication with said second opening;

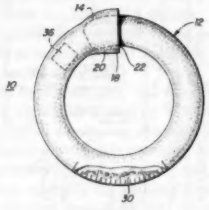
said third opening communicating with said cavity thereby placing said third opening in communication with said second flexible tube means through said cavity and said first opening.

4,265,236

PORTABLE INHALATOR DEVICE

Angelo M. Pacella, 39 Chute Rd., Dedham, Mass. 02026

Filed Mar. 31, 1980, Ser. No. 135,629
Int. Cl.³ A61M *15/00*
U.S. Cl. 128—203.23 **19 Claims**



1. A portable inhalator device comprising:

a length of flexible tubing;

a frictional engaging area on the outer surface of a first end of said tubing;

a second engaging area on the inner surface of the second end of said tubing for releasably gripping said first end of said tubing and sealingly engaging therewith to form a closed loop

means on said first end of said tubing for insertion into a breathing passage of a user and into said second end; and

means within said tubing for holding inhalant for affecting the flow of air therethrough whereby when said first end is gripped in said second end, the tubing acts as a storage vessel and when said ends are separated, the tubing acts as an inhalator.

4,265,237

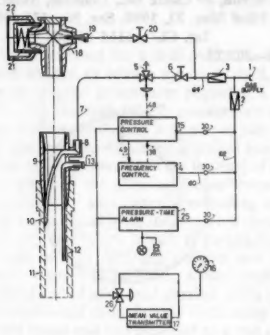
APPARATUS FOR ENHANCING A PERSON'S BREATHING AND/OR ARTIFICIAL RESPIRATION

Erik Schwanbom, Luebeck, and Detlef Warnow, Gross Gronau, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,143
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.24 **6 Claims**

1. An apparatus for enhancing a person's breathing and artificial respiration which has inspiration and expiration phases and where the inspiration phase is repeated periodically within a time constant of the operation of a person's lungs, comprising: a respiratory gas breathing line having a tubular connection adapted to be connected to a person's trachea, a blow-in line located in said tubular connection, a gas supply line connected into said tubular connection through said blow-in line in said tubular connection, a pressure sensor located in said tubular connection downstream of said blow-in line, pressure control means connected to said pressure sensor, a pres-

sure reducer, a dosing valve, and an inspiration valve having an open and closed position all located in series in said gas supply line, said pressure control means connected to said inspiration valve and being responsive to said pressure sensor for closing said inspiration valve, frequency control means connected to said pressure control means for supplying pressure signals indicative of inspiration and expiration to said pressure control means, said pressure control means being responsive to said signals for alternately opening and closing said inspiration valve during inspiration and expiration phases, respectively, said frequency control means having a housing with a control chamber defined therein, adjustable partition means in said control chamber dividing said control chamber into an inspiration chamber portion and an expiration chamber portion of adjustable relative size, a frequency valve having an inspiration line connected to said inspiration chamber and an expiration line connected to said expiration chamber, first



pneumatic diaphragm control elements in said inspiration line and said expiration line respectively, a second inspiration line connected from said inspiration chamber to said inspiration valve and a second expiration line connected from said expiration chamber to said inspiration valve, second pneumatic diaphragm control elements in said second inspiration and second expiration lines respectively, connected to said pressure control means and to said first pneumatic diaphragm control elements, said first pneumatic diaphragm control elements being responsive to said frequency control valve and signals from said second pneumatic diaphragm control elements to initiate inspiration and expiration phases, said second pneumatic diaphragm control elements producing signals at the end of inspiration and expiration phases, respectively, said pressure control means switching said second pneumatic diaphragm control elements to initiate an expiration phase and to close said inspiration valve if pressure in said tubular connection attains a selected limit.

4,265,238

SIMULATED OXYGEN BREATHING APPARATUS

Edmund Swiatosz, Maitland; Wiley V. Dykes; Paul D. Grimmer, both of Winter Park, and Bruce V. Lane, Palm Bay, all of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1979, Ser. No. 66,944
Int. Cl.[3] A62B *7/00*
U.S. Cl. 128—205.12 **8 Claims**

1. An apparatus that can be utilized as a simulator of a breathing apparatus, comprising:

a facepiece for placement in covering relationship to the nose and mouth of a wearer;

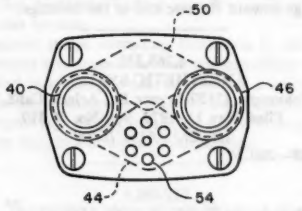
conduit means coupled to said facepiece for conveying gaseous fluid to and from said facepiece;

first and second aperture means coupled to said conduit means, communicating ambient atmosphere to said conduit means, and said conduit means to the ambient atmosphere, respectively;

means providing one-way flow from said first aperture means through said conduit means and one-way flow from said conduit means through said second aperture means;

means occupying said first aperture means for filtering the atmosphere communicated through said first aperture means;

an inflatable bag member coupled to said conduit means and communicating with said second aperture means;



means occupying said second aperture means for resistively venting said conduit means to said ambient atmosphere while maintaining a predetermined pressure within said bag member;

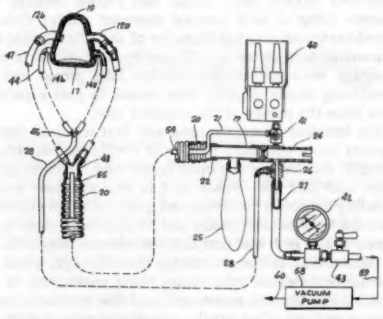
such that air is drawn through said filtering means and conveyed to said wearer when said wearer inhales, and said bag member is pressurized when said wearer exhales, and said conduit means is vented when the pressure within said bag member exceeds the predetermined resistance of said venting means.

4,265,239

GAS SCAVENGING EXHAUST SYSTEM

Charles M. Fischer, Jr., 9260 Alcosta Blvd., Suite D-30, San Ramon, Calif. 94583, and Robert S. Price, 3798 Mosswood Dr., Lafayette, Calif. 94549

Filed Nov. 27, 1978, Ser. No. 964,086
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—205.17 **9 Claims**



1. In a gas supply system for administering gas to a patient, the system having a remote vacuum means, a scavenging mask with a peripheral chamber adjacent to the rim of the mask, means for supplying gas to the mask, means for removing exhaled gas from the mask, and an exhaust port communicating with the mask through the means for removing exhaled gas, an improved exhaust assembly comprising:

A. resistance means communicating with the exhaust port for creating a resistance to gas flow therefrom, said resistance means comprising an exhaust tube having a first end, a second end, and a channel therethrough, said channel

having a restricted opening near the first end thereof so as to provide resistance to gas flow; and

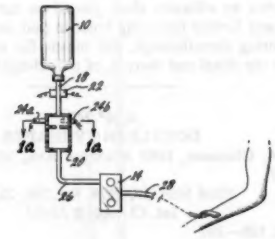
B. divider means for dividing gas flow, the divider means communicating with the resistance means, with the peripheral chamber, with the ambient atmosphere, and with the remote vacuum means so that the vacuum-induced gas flow is divided between exhaled gas from the exhaust port, scavenged gas from the peripheral chamber and air from the ambient atmosphere, wherein said divider means includes the second end of said exhaust tube wherein said second end is open to the ambient atmosphere and a tee divider having two ends and a stem, the tee divider communicating at one end with the exhaust tube through the tube wall between the restricted opening and said second end of the exhaust tube communicating with the ambient atmosphere, the tee divider communicating at the other end with said remote vacuum means, the tee divider communicating at the stem thereof with said peripheral chamber.

4,265,240

APPARATUS FOR PROVIDING A CONTROLLED INTRODUCTION OF INTRAVENOUS FLUID TO A PATIENT

Jon A. Jenkins, Rancho Santa Fe, Calif., assignor to IMED Corporation, San Diego, Calif.

Filed Apr. 16, 1979, Ser. No. 30,161
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 E **13 Claims**



1. In combination for providing for the flow of fluid to a patient,

first means for providing for a passage of a first particular volume of fluid at a first controlled rate to the patient,

second means for providing for a passage of a second particular volume of fluid at a second controlled rate to the patient where the second particular rate is different from the first particular rate,

third means operatively coupled to the first and second means for providing for an initial operation of the first means in producing a passage of fluid to the patient,

fourth means responsive to the passage of the first particular volume of fluid to the patient for interrupting the operation of the first means and instituting the operation of the second means,

a first source of fluid,

a drip chamber,

first hollow tubing extending from the first source to the first tubing and having a volume less than that of the drip chamber,

second hollow tubing extending from the drip chamber to the first means, and

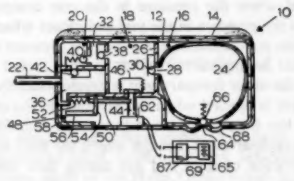
sensor means associated with the first hollow tubing at a position adjacent the drip chamber for sensing when the fluid from the first source no longer flows through the first hollow tubing.

4,265,241

IMPLANTABLE INFUSION DEVICE

Peer M. Portner, Kensington, and Jal S. Jassawalla, San Francisco, both of Calif., assignors to Andros Incorporated, Berkeley, Calif.

Filed Feb. 28, 1979, Ser. No. 15,927
Int. Cl.³ A61M 7/00
U.S. Cl. 128—260 **4 Claims**



1. An implantable infusion device for delivering precisely regulated dosages of drugs under external control, comprising

a housing for the infusion device which is completely implantable within the body of a patient,

said housing including a reservoir chamber and a compressable reservoir arranged in said reservoir chamber for containing a selected drug,

catheter means for connecting said reservoir with a portion of the body to which the drug is to be delivered, said housing including a pumping chamber having inlet means in communication with said reservoir and outlet means in communication with said catheter, and

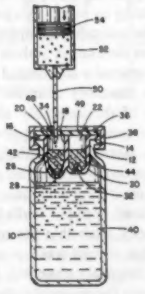
actuating means operable for causing flow of a precise dosage of the selected drug from said reservoir through said catheter means to the body portion, said actuating means having at least a portion implanted in the body of the patient along with said housing and including a movable element operable reciprocally to vary the volume of said pumping chamber and a solenoid for driving said element, said reservoir chamber containing means for developing a pressure within said reservoir which exceeds that of said pumping chamber when said movable element increases the volume thereof, a power source for said solenoid, and telemetry means responsive to a telemetered signal from outside the body for actuating said solenoid from said power source.

4,265,242

FILTER DEVICE FOR INJECTABLE FLUID

Milton J. Cohen, 10823 Burbank Dr., Potomac, Md. 20854

Filed Jul. 23, 1979, Ser. No. 59,670
Int. Cl.³ A61J 1/00
U.S. Cl. 128—272 **8 Claims**



1. A filter device for injectable fluid comprising a vial open

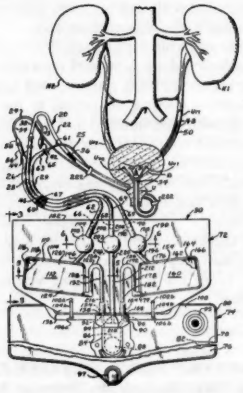
at one end and partially filled with the injectable fluid, a sealing disc sealing the open end of the vial, a container secured in sealing relation to the open end of the vial between the sealing disc and the interior wall of the vial and extending into the neck portion of the vial, a wall subdividing the container into two compartments communicating at one end with the sealing disc which seals the compartments and having self sealing slits in the other end of each compartment, one of which opens in response to pressure differential between one compartment and the vial when the pressure in the one compartment is greater than the pressure in the vial and closes when the pressure in the one compartment is less than the pressure in the vial, and the other having means which remains sealed when the pressure in the other compartment is greater than the pressure in the vial but is opened when the pressure in the other compartment is less than the pressure in the vial, and filter means within each compartment through which the fluid or gas must flow for filtration of fluid and gas during flow through the compartments.

4,265,243

COLLECTION CONTAINER WITH SIPHON ASSEMBLY

Glenn N. Taylor, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Apr. 4, 1979, Ser. No. 26,868
Int. Cl.³ A61F 5/44
U.S. Cl. 128—275 **18 Claims**



1. A container for collecting body fluids comprising:

a receptacle having a cavity; and

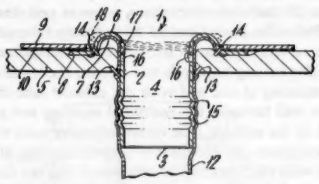
a siphon assembly having a pair of opposed spaced walls and a sidewall defining an assembly chamber, a port communicating with the assembly chamber to receive the fluids, and wall means defining a siphon passageway having an upper portion spaced a substantial distance above a lower portion of the assembly chamber and located below an upper portion of the assembly chamber, a first portion connecting the passageway upper portion to the lower portion of the assembly chamber, and a second portion extending downwardly from the passageway upper portion and communicating with the receptacle cavity, with at least one of said opposed walls being constructed from a flexible material, such that the one wall may be pressed toward the other of said walls to substantially reduce the volume in the assembly chamber, including a drip chamber located above the assembly chamber, and a first channel communicating between the drip chamber and the port adjacent the upper portion of the assembly chamber.

4,265,244

STOMA ADAPTOR

Roger C. Hill, Skipton, England, assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Feb. 7, 1979, Ser. No. 10,275
Int. Cl.³ A61F 5/44
U.S. Cl. 128—283 **7 Claims**



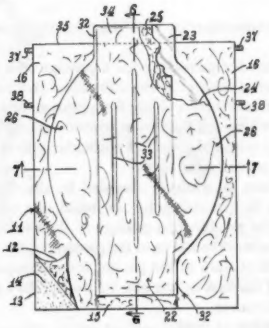
1. A stoma adaptor comprising: an open tube of non-toxic material, having a proximal end for insertion into the lumen of a body orifice at a stoma site and a distal end, said distal end comprising a rim turned outwards to form an annular lip having a concave underside geometrically continuous with the rest of the tube, whereby an open live intestine advanced over the tube from the proximal end will take up a similarly flared configuration for attachment to the external periphery of the orifice; means for securing an open intestine to the outer surface of the tube; means for securing the tube to the body wall, said means for securing the tube to the body wall comprising tabs formed integral with the outer edge of said annular lip for underlying an adhesive sheet placed on the skin around the stoma, and further including holes in said annular lip adapted for suturing therethrough; and means for attachment to the tube, at the distal end thereof, of a fluid-tight stoma closure.

4,265,245

DOUBLE-DUTY DIAPER

Jacob A. Glassman, 1680 Michigan Ave., Miami Beach, Fla. 33139

Filed Mar. 19, 1979, Ser. No. 21,352
Int. Cl.³ A41B 13/02
U.S. Cl. 128—287 **11 Claims**



1. A double-duty diaper comprising, in combination, a main diaper including at least one relatively thick substantially rectangular layer of highly moisture absorbent material constituting a longitudinal central portion, a thin layer of moisture impervious material underlying the central portion and extending laterally beyond the longitudinal edges of said central portion, a thin layer of moisture pervious material overlying the central portion and having laterally extending side portions one overlying each lateral extension of the moisture impervious material, said lateral extensions each having a width corre-

sponding at least to one-half the width of the longitudinal central portion and being bonded together face to face; and a removable body contacting insert strip including a central relatively thick body of highly moisture absorbent material of a width responding substantially to the width of and superposed on the said longitudinal central portion, adhesive means removably securing the insert strip to said central portion, and means to prevent spillover from said insert strip onto the main diaper comprising thinner lateral wing portions on said central relatively thick body each terminating short of the ends of said thick body and being of a width not greater than the width of the laterally extending side portions of the main diaper, said thinner wing portions comprising a thin bottom layer of moisture impervious material and a thin upper layer of moisture absorbing material bonded together face to face.

4,265,246

STERILE COSMETIC SUTURE AND SCALP IMPLANT FOR ATTACHING HAIR PIECES

Robert J. Barry, Little Falls, N.J., assignor to Barry Cosmetic Suture Company, Inc., Little Falls, N.J.

Filed May 30, 1979, Ser. No. 43,651
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—330 **3 Claims**

1. A needle, suture and scalp implant assembly comprising a needle adapted to penetrate the scalp generally tangentially of the skull for forming entrance and exit scalp openings, a trailing flexible tubular tissue-compatible suture connected with the needle, a tubular scalp implant bushing engaged telescopically and frictionally in the bore of said suture, said implant bushing having a metal tube body and an exterior sheath of soft compliant tissue-compatible silicone rubber covering the entire exterior surface of the metal tube body and fixed thereon, and elongated control element of greater length than the implant bushing extending movably through the bore of the metal tube body of the implant bushing and trailing from the implant bushing and suture, an enlarged head at each end of said elongated control element, the heads of said control element being larger than the bore of the metal tube body and incapable of passing through said bore, whereby after positioning of the implant bushing in the scalp the control element may be held to prevent axial displacement of the implant bushing while the tubular suture is pulled from the silicone rubber covering of the implant bushing.

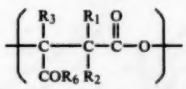
4,265,247

MALIC ACID POLYMERS

Robert W. Lenz, Amherst, Mass., and Michel Vert, Deville-les-Rouen, France, assignors to Research Corporation, New York, N.Y.

Filed Nov. 7, 1979, Ser. No. 92,183
Int. Cl.³ C08G *63/08;* A61L *17/00*
U.S. Cl. 128—335.5 **16 Claims**

1. A polymer containing repeating units of the formula:



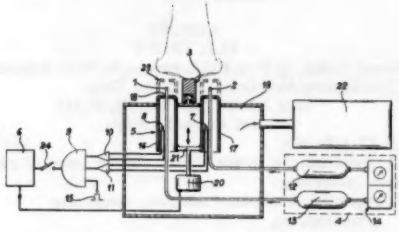
wherein R_1 and R_2 are independently hydrogen, alkyl, aryl, aralkyl, substituted alkyl, substituted aryl, substituted aralkyl, R_3 is hydrogen, alkyl or $-(CH_2)_n COOR_8$ where n is an integer of 0 to 10, R_6 is OR or NR_4R_5, wherein R and R_8 are independently hydrogen or a group derived from a compound containing esterifiable hydroxyl groups, R_4 and R_5 are independently alkyl, aryl, aralkyl, substituted alkyl, substituted aryl, substituted aralkyl or together comprise an alkylene group.

4,265,248

DIFFERENTIAL OLFACTOMETER

Rene Chulton, Clamart, and Patrick MacLeod, Chatenay-Malabry, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 13, 1978, Ser. No. 969,257
Claims priority, application France, Jan. 10, 1978, 78 00509
Int. Cl.³ A61B *5/00*
U.S. Cl. 128—630 **15 Claims**



1. A differential olfactometer comprising two atomizers located on either side of a nasal support and respectively associated with a circuit for supplying olfactory stimuli, a retractable antidiffusion device which hides the atomizers during the intervals between nasal stimulation periods and a breathing detection device associated with an electronic control unit for controlling the hiding of the atomizers, wherein the supply circuit for the atomizers comprises means for continuously supplying the olfactory stimuli to the atomizers in a continuous stream during the entire time period of inhalation.

4,265,249

CATHETER DEVICE AND SYSTEM FOR CONTINUOUS CHEMICAL ANALYSIS OF BODY FLUIDS IN VIVO

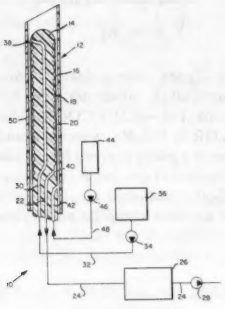
Johannes G. Schindler, Marburg, Lahn, and Wilfried Schael, Bad Homburg, both of Fed. Rep. of Germany, assignors to Dr. E. Fresenius Chemisch pharmazeutisch Industrie KG, Bad Homburg, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 928,914

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1977, 2734247

Int. Cl.³ A61B 5/00

U.S. Cl. 128—635 **8 Claims**



1. A catheter for use with a system for obtaining body fluids from fluid carrying members for a continuous chemical analysis thereof comprising:

(a) an elongated solid body portion having at least three ducts disposed therein, each said ducts being provided with an entrance at one end of said body portion and providing a fluid flow path to the surface of said body portion;

(b) a semi-permeable membrane filter means circumscribing said body portion and supported thereby, leaving at least one of said ducts uncovered, said membrane being permeable to the substances to be analyzed and impermeable to high molecular weight and corpuscular portions of said fluids;

(c) continuous channel means formed on the surface of said body portion for communicating with at least two of said ducts to provide a continuous fluid flow path, said membrane means covering said channels.

4,265,250

ELECTRODE

Dawood Parker, El Toro, Calif., assignor to Battle Research and Development Associates, Cambridge, Mass.

Filed Jul. 23, 1979, Ser. No. 59,643

Int. Cl.³ A61B 5/00

U.S. Cl. 128—635 **10 Claims**

1. Apparatus for measuring the concentration of gases in blood, comprising

a disposable skin-contact assembly, comprising

a first support,

anode and cathode electrodes mounted on said support, and

a skin-contact membrane permeable to said gases mounted on said support adjacent to said electrodes to define an electrolyte region between said membrane and said electrodes, and

a reusable base assembly, comprising

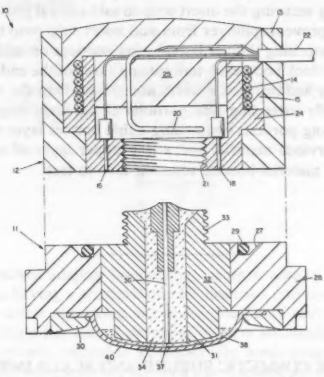
a second support,

a metal member mounted on said second support,

heat source means mounted on said second support for supplying heat through said disposable assembly to said electrolyte region,

an electrical contact member mounted on said second support, and

means for connecting said metal member and said contact member to an electrical cable to provide an electric potential therebetween,



said assemblies further comprising respective interlocking means for bringing said metal member into contact with one said electrode and said contact member into contact with the other said electrode.

4,265,251

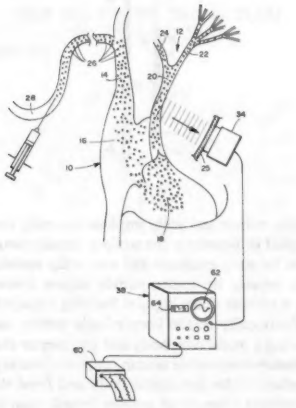
METHOD OF DETERMINING PRESSURE WITHIN LIQUID CONTAINING VESSEL

Ernest G. Tickner, Morgan Hill, Calif., assignor to Rasor Associates, Inc., Sunnyvale, Calif.

Filed Jun. 28, 1979, Ser. No. 52,745

Int. Cl.³ A61B 5/02

U.S. Cl. 128—660 **9 Claims**



1. A method of determining pressure within a liquid containing vessel, comprising:

adding a solid microbubble precursor to said liquid;

retaining said precursor in said liquid for sufficient time to form a plurality of microbubbles thereby generating a plurality of sonic signals, said precursor forming said plurality of microbubbles at a plurality of times, wherein said precursor is formed to provide each of said microbubbles of a substantially equal selected size, said size being

selected to be within a range from about 0.5 micron to about 325 microns;

measuring a characteristic of said sonic signals representative of the pressure in the liquid, said measuring being of the ultrasonic frequency generated by formation of said microbubbles as a function of said times; and

determining the pressure in the liquid from the measured characteristic, said determining being of the pressure in the liquid as a function of time.

4,265,252

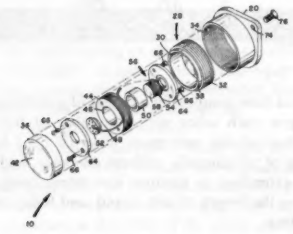
INTRACRANIAL PRESSURE IMPLANT

John G. Chubbuck, Silver Spring, and James T. Turner, Ellicott City, both of Md., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Apr. 19, 1978, Ser. No. 897,716

Int. Cl.³ A61B 5/02

U.S. Cl. 128—748 **18 Claims**



1. An apparatus for sensing pressure within a cavity in the body of a living entity and for implantation within said body comprising:

inductor-capacitor resonant circuit means;

pressure responsive means for responding to said pressure disposed in said cavity; and

means for increasing the resonant frequency of said resonant circuit means in response to an increase in said pressure as sensed by said pressure responsive means and for decreasing said resonant frequency of said resonant circuit means in response to a decrease in said pressure as sensed by said pressure responsive means, said means for increasing and decreasing said resonant frequency comprising deformable means for acting upon said inductor-capacitor resonant circuit means to vary the frequency thereof in response to deformation of the configuration of said deformable means, said deformable means sealing therein a predetermined quantity of a compressible medium, said deformable means thereby serving as a reference pressure source.

4,265,253

SKIN CONDUCTING ELECTRODE AND ELECTRODE ASSEMBLY

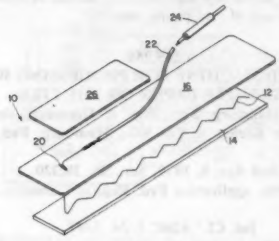
William W. Abraham, New Hartford, N.Y., assignor to Consolidated Medical Equipment Inc., Utica, N.Y.

Filed Jul. 9, 1979, Ser. No. 55,812

Int. Cl.³ A61N 1/18

U.S. Cl. 128—798 **5 Claims**

1. A skin conducting electrode assembly for use in supplying electrical impulses to a patient to reduce pain, said electrode assembly comprising, in combination, an electrode comprising a thin conductive member having an undulating configuration along the length thereof such that said member extends across a width of skin substantially greater than the width of said member; means for providing electrical impulses to said conductive member including a lead wire directly connected to said electrode; a gel pad in contact with one side of said electrode, said gel pad extending beyond the configuration of said member to prevent direct contact of said electrode with the skin of the patient; an adhesive pad in adhesive contact with the other side of said electrode, said adhesive pad extending beyond the outer edges of the gel pad to hold the assembly to the patient and to maintain said gel pad and said electrode in electrical contact with the skin of the patient, the configuration of said conductive member providing a wide area of the skin which is in close contact with said electrode, such that said electrode easily stretches and flexes as the skin or said assembly



stretches and flexes, a portion of said conductive member extending through said adhesive pad said lead wire being attached to that portion of said conductive member extending through said adhesive pad and said assembly further comprising an adhesive strip secured to said adhesive pad holding said portion of said conductive member and a portion of said lead wire firmly in place.

4,265,254

APPARATUS FOR PERFORATING CIGARETTE PAPER OR THE LIKE

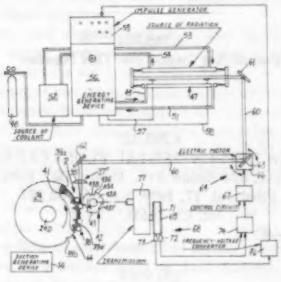
Franz-Peter Koch, Schwarzenbek; Peter Pinck, Gross-Hansdorf; Kurt-Eckard Petersen, Wentorf; Norbert Lange, Glinde; Elke Köhler, and Ulrich Bornfleth, both of Hamburg, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 963,087

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1977, 2754104

Int. Cl.³ A24C 5/60

U.S. Cl. 131—281 **14 Claims**



1. In a machine which produces and/or processes rod-shaped articles constituting or forming part of smokers' products of the type having at least one tubular envelope constituting a section of a web of flexible wrapping material and surrounding at least one rod-like filler, the combination of means for advancing the wrapping material along a predetermined path; a prime mover operative to determine the rate of production and/or processing of rod-shaped articles and arranged to drive said advancing means; and an apparatus for making perforations in the wrapping material, said apparatus comprising a source of coherent radiation, energizing means operable to energize said source so that the latter emits a beam of coher-

ent radiation, optical means for focusing said beam upon the wrapping material in said path, mobile beam reflecting means interposed between said source and said optical means, moving means actuatable to move said reflecting means between a plurality of positions in each of which said optical means focuses said beam upon a different portion of the wrapping material in said path, means for operating said energizing means in synchronism with the operation of said prime mover, and means for actuating said moving means in synchronism with the operation of said prime mover.

4,265,255

METHOD AND MACHINE FOR PROCESSING WEBS OF CIGARETTE PAPER OR THE LIKE

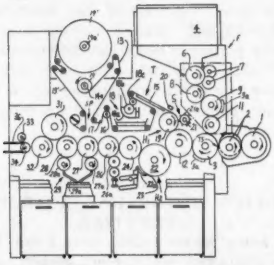
Adolf Helms, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,320

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816165

Int. Cl.[3] **A24C** *5/24, 5/47*

U.S. Cl. 131—69 **24 Claims**



1. A method of connecting a sheet-like wrapping material with rod-shaped smokers' products, comprising the steps of applying to one side of the wrapping material at least one layer of an aqueous dispersion of hotmelt; thereupon expelling the liquid from the layer, including heating the layer; and the additional steps of heating the layer to a temperature at which the hotmelt of the layer is in a molten state, and draping the wrapping material around smokers' products.

4,265,256

Patent Not Issued For This Number

4,265,257

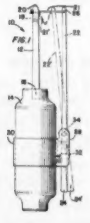
POWER DRIVEN DENTAL FLOSS CLEANER

James R. Salyer, 816 Bacon Ave., Dover, Del. 19901

Filed Jul. 17, 1979, Ser. No. 58,381

Int. Cl.[3] **A61C** *15/00*

U.S. Cl. 132—92 R **31 Claims**



1. A power driven floss holder and cleaner comprising vibratory source means, an elongated vibratory arm mounted on said vibratory source means and having a distal end spaced outwardly from said vibrating source means, said vibratory source means being operative to impart vibratory motion to said vibratory arm, and an elongated nonvibratory arm mounted upon said vibratory source means to extend in spaced relationship to said vibratory arm from substantially the distal end thereof to said vibratory source means.

4,265,258

DENTAL FLOSS

Melvin H. Eaton, II, 2600 W. Landing Rd., Virginia Beach, Va. 23456

Filed Aug. 28, 1979, Ser. No. 70,364

Int. Cl.[3] **A61C** *15/00*

U.S. Cl. 132—93 **13 Claims**

1. A dental floss comprising a strand of a multitude of fibers overlaid upon each other with a number of the fiber ends extending beyond the outermost layer of fiber bodies, said strand being of substantially uniform diameter, said number of fiber ends extending in random directions, being randomly spaced along the length of said strand, and being substantially self-supporting.

4,265,259

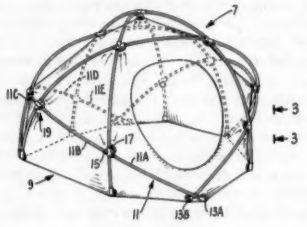
TENT

Robert E. Gillis, P.O. Box 67, Aptos, Calif. 95003

Filed Jun. 7, 1979, Ser. No. 46,341

Int. Cl.[3] **A45F** *1/16*

U.S. Cl. 135—1 R **8 Claims**



1. A dome structure comprising a plurality of stressed poles each pole being flexed into an arcuate shape to exert a force in a direction which is radially outward of each pole, said poles crossing each other at a plurality of intersections, said poles having terminal ends defining a plane,

said poles comprising a plurality of rods held in end-to-end relationship by couplings,

a flexible membrane beneath said poles,

said couplings being attached to said membrane and holding said poles in intersecting relationship at each of said plurality of intersections, said couplings engaging each of said poles substantially at the point of intersection of said poles and holding intersecting poles relative to each other at said intersections and relative to said membrane in a substantially fixed relationship,

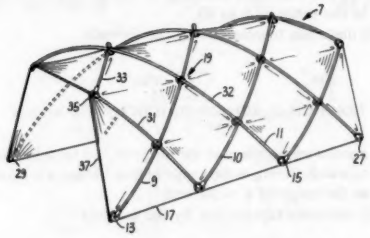
said couplings attaching said membrane to said poles and transmitting said outwardly directed force to said membrane,

said membrane constituting the sole connection between spaced terminal ends of said poles.

4,265,260
FLEXIBLE VAULT STRUCTURE

Robert E. Gillis, P. O. Box 67, Aptos, Calif. 95003

Filed Jun. 22, 1979, Ser. No. 50,981
Int. Cl.[3] A45F 1/16
U.S. Cl. 135—3 R 6 Claims



1. A vault structure having an arcuate shape in cross section, a generally rectangular shape in plan, said vault structure extending from a plane and having no member from side-to-side in said plane comprising in combination:

a. A plurality of rod-like members,

b. each of such rod-like members being held in tension by stress means and thereby formed into a generally arcuate shape and a plurality of said rod-like members extending from the level of the plane on one side, over the top of the arcuate structure to the level of the plane on the opposite side,

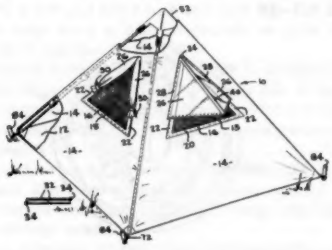
c. said stress means comprising a flexible member attached to said rod-like members by means of a sliding connection and

d. said stress means forming a plurality of geometric cords with respect to said arcuate rod-like members.

4,265,261
TENT

Joseph K. Barker, Rte. 7, Box 111, Abingdon, Va. 24210

Filed Dec. 7, 1979, Ser. No. 102,110
Int. Cl.[3] A45F 1/16
U.S. Cl. 135—3 R 8 Claims

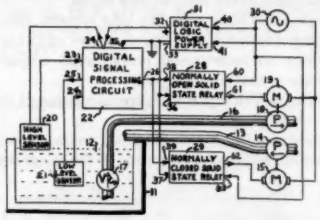


1. A shelter comprising a flexible polygonal floor panel, a plurality of flexible triangular side walls with each having a lower edge attached to an edge of said floor panel, and edges of adjacent side walls attached together thereby forming an apex at the upper end thereof and floor corners in conjunction with the floor panel at the lower ends thereof, and a support structure including telescoping rod members positionable within the shelter along the adjoining edges of said side walls and an apex cap member formed of plastic material positionable in the apex formed by said side walls and having flexible spring members extending downwardly and outwardly therefrom for receiving and retaining upper ends of said telescoping rod members.

4,265,262
FLUENT MATERIAL LEVEL CONTROL SYSTEM

William Hotine, Box 216, Albion, Calif. 95410

Filed Mar. 19, 1979, Ser. No. 21,906
Int. Cl.[3] F17D 3/00
U.S. Cl. 137—2 6 Claims



1. The method of controlling the level of fluent material in a reservoir and maintaining said level between desired high and low levels in said reservoir, which comprises:

detecting increasing or decreasing levels of fluent material by placing upper and lower level sensors at said desired levels, said sensors individually transmitting a digital signal voltage upon immersion in said material and terminating said digital output signal upon emergence from said material;

transmitting said digital voltage signals from said sensors to first and second input terminals of a digital signal processing circuit including digital logic gates, said circuit being energized by a connected power supply and having first and second output terminals;

processing said digital signals from said sensors in said processing circuit in a manner to transmit a digital signal voltage to said first and second output terminals of said processing circuit when a digital signal voltage is received at both said first and said second input terminals, to maintain said digital signal voltage at said first and said second output terminals after a digital "zero" signal voltage appears at said first input terminal, and to transmit a digital "zero" signal voltage to said first and said second output terminals after a digital "zero" voltage is received at said second input terminal;

transmitting said digital voltage output signal from said second output terminal of said processing circuit to the input circuit of a solid state relay having an input circuit and an output circuit, said relay output circuit being serially connected between a source of electrical power and power driven flow control means, said relay input circuit responding to said output digital signal from said processing circuit and changing the operating state of said output circuit of said relay;

operating flow control means by said change of state of said relay output circuit; and

controlling flow of said material in piping connected to said reservoir to maintain level of said material within said desired levels in said reservoir.

4,265,263
NON-LINEAR LEVEL CONTROLLER

James W. Hobbs, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 28, 1979, Ser. No. 70,300
Int. Cl.[3] F17D 3/01
U.S. Cl. 137—2 14 Claims

7. A method for controlling the level of a liquid in a means for containing said liquid comprising the steps of:

establishing a first signal (LP) representative of the actual level of said liquid at a time T_1;

establishing a second signal (L) representative of the actual

liquid level of said liquid at a time T_2, said time T_2 being later in time than said time T_1;

subtracting said first signal from said second signal to establish a third signal representative of the change in liquid level (DL) between said time T_1 and said time T_2;

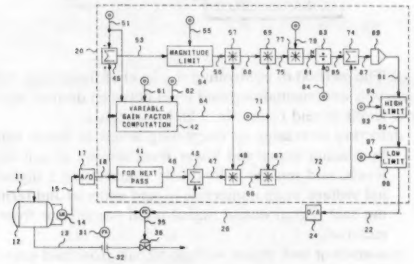
establishing a variable gain factor (VGF) which is a non-linear function of the level of said liquid;

multiplying said third signal by said variable gain factor to establish a fourth signal representative of (VGF)*(DL);

establishing an incremental proportional output (DP) in response to said fourth signal;

establishing a fifth signal (SP) representative of the desired level of said liquid;

subtracting said fifth signal from said second signal to establish a sixth signal representative of the integral error (E);



multiplying said sixth signal by said variable gain factor to establish a seventh signal representative of (VGF)*(E);

establishing an incremental integral output (DI) in response to said seventh signal;

combining said incremental porportional output and said incremental integral output to produce a total incremental output (DF);

adding said total incremental output to the total incremental output of said non-linear level controller at said time T_1 to establish a position output (FS); and

manipulating the flow of liquid from said means for containing said liquid in response to said position output to thereby control the level of said liquid in said means for containing said liquid.

4,265,264

METHOD OF TRANSPORTING VISCOUS HYDROCARBONS

Thomas R. Sifferman, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed May 3, 1979, Ser. No. 35,561
Int. Cl.³ F17D *1/17*
U.S. Cl. 137—13 **5 Claims**

1. In the method of transporting a viscous hydrocarbon through a pipe the improvement which comprises forming an oil-in-water emulsion by adding to said hydrocarbon from about 20 to about 80 volume percent of an aqueous solution containing an effective amount of a combination of

(a) about 25 to about 20,000 parts per million, based on said hydrocarbon, of a salt of an ethoxylated alcohol sulfate which is represented by the formula

$$[CH_3(CH_2)_xCH_2(OCH_2CH_2)_nOSO_3]M$$

wherein x is an integer in the range of about 10 to about 16, n is a number in the range of about 3 to 12, and M is sodium or ammonium, and

(b) about 50 to about 20,000 parts per million of a second surfactant selected from the group consisting of

(i) materials represented by the formula

$$HO(CH_2CH_2O)_a(\underset{\displaystyle CH_3}{\underset{|}{C}}HCH_2O)_b(CH_2CH_2O)_cH, \text{ wherein}$$

a and c are numbers in the range of 2 to 10, with the sum of a and c being in the range of 4 to 20, and b is a number in the range of 6 to 30,

(ii) materials represented by the formula

$$HO(\underset{\displaystyle CH_3}{\underset{|}{C}}HCH_2O)_a(CH_2CH_2O)_b(\underset{\displaystyle CH_3}{\underset{|}{C}}HCH_2O)_cH, \text{ wherein}$$

a and c are numbers in the range of 3 to 15, with the sum of a and c being in the range of 6 to 30, and b is a number in the range of 4 to 20, and

(iii) materials represented by the formula

$$R-(OCHCH_2)_a(CH_2CH_2O)_bH, \text{ wherein}$$
$$\underset{\displaystyle CH_3}{\underset{|}{}}$$

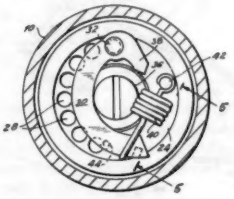
R is a linear alkyl group containing 10 to 18 carbon atoms, a is a number in the range of 6 to 30 and b is a number in the range of 4 to 20.

4,265,265

PNEUMATIC TOOL GOVERNOR

William K. Wallace, Barneveld, and David A. Giardino, Deerfield, both of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Sep. 10, 1979, Ser. No. 73,716
Int. Cl.³ G05D *13/12*
U.S. Cl. 137—56 **5 Claims**



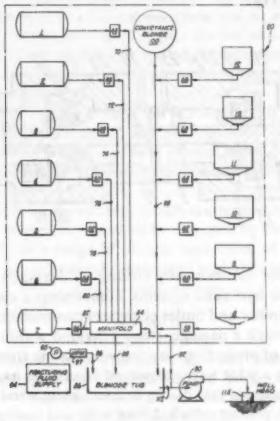
1. A governor for a pressurized medium powered tool, said governor including a body member coupled for rotation with a rotor of the tool, a plurality of holes formed in the body member for conduction of pressurized medium to the motor of the tool for operation thereof, an arcuate valve element pivotally mounted upon the body member and responsive to centrifugal force to progressively cover portions of the holes in the body member, a spring means arranged to resist centrifugal movement of the value element, a screw centrally secured to the end of the rotor and coaxial with the axis of rotation of the rotor, said valve element being arranged to abut said screw when the element is rotated a given amount in either direction of rotation.

4,265,266

CONTROLLED ADDITIVE METERING SYSTEM

Gerald C. Kierbow; Harvard L. Tomlinson; Herbert J. Horinek, and Stephen F. Crain, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 23, 1980, Ser. No. 114,629
Int. Cl.[3] G05D 11/035
U.S. Cl. 137—101.19 55 Claims



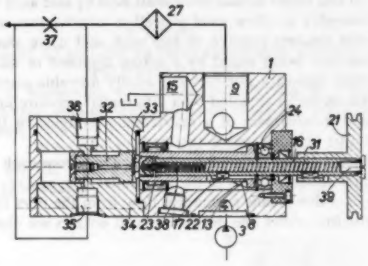
1. A material storage and metering system, comprising:
first storage means for storing a first solid phase material;
first metering means for transferring said first material from said first storage means at a controlled flow rate within a first range of flow rates for blending with a flowing primary substance, said first range being defined with a low end and a high end;
second storage means, for storing a second solid phase material;
second metering means for transferring said second material from said second storage means at a controlled flow rate within a second range of flow rates for blending with said flowing primary substance, said second range being defined by a low end and a high end, said high end of said second range being at least substantially as great as said low end of said first range; and
control station means, responsive to the flow rates of said first and second materials, and to a flow rate of said primary substance, for providing the controlled flow rates of said first and second materials, said control station means including:
material determining means for determining the amounts of said first material and said second material being discharged from said first storage means and said second storage means;
primary substance sensing means for sensing the amount of said primary substance being discharged from a primary substance container; and
controlling means, responsive to said material determining means and said primary substance sensing means, for controlling the amounts of said first and second materials being discharged from said first and second storage means;
wherein said first metering means includes:
metering bin means for receiving said first material from said first storage means; and
conveyor means, controlled by said controlling means, for discharging said first material from said first metering bin means at said controlled flow rate within said first range of flow rates.

4,265,267

FLOW CONTROL DEVICE FOR USE WITH POSITIVE DISPLACEMENT PUMP

Ivan J. Cyphelly, Neuhaus, 8128-Hinteregg, Switzerland

Continuation-in-part of Ser. No. 762,570, Jan. 26, 1977, Pat. No. 4,164,240. This application Aug. 23, 1978, Ser. No. 935,913
Claims priority, application Switzerland, Aug. 25, 1977, 10402/77; Jan. 25, 1978, 811/78; Jan. 25, 1978, 812/78
Int. Cl.[3] F16K 5/00, 15/00, 17/38
U.S. Cl. 137—117 13 Claims



1. A flow control device for use in a system having an inlet line from a positive displacement fluid pump, a first outlet line directed to a load and a second outlet line directed to a zero pressure pump reservoir, comprising:
a fixed valve housing having a main bore therein, said bore communicating with the second outlet line;
two nozzles passing through said valve housing and extending into opposite sides of said bore, the openings of said nozzles being directed into said bore diametrically toward one another;
first conduit means in said valve housing for directing fluid from the inlet line to each of said nozzles;
rotary shutter means coaxially positioned within said bore for periodically and alternately, as said rotary shutter means continuously rotates, closing both of said nozzles, simultaneously, and opening said nozzles to allow flow into the second outlet line, whereby the necessity for a sealing relationship of said rotary shutter means with said valve housing is eliminated, said rotary shutter means comprising a drive shaft and two shutters thereon positioned to simultaneously close and open said nozzles, and including an axial bearing assembly for holding said shaft in coaxial alignment with said bore;
second conduit means for directing fluid from each of said first conduit means to the first outlet line; and
check valve means permitting flow from the inlet line into the first outlet line only when said nozzles are closed, said check valve means including a valve seat having the shape of a protruding ring presenting an annular front surface, the inner and outer edges of said annular front surface being configured to meander about a circle in parallel relationship, thereby increasing the effective valve seat length and decreasing the effective valve seat width.

4. A flow control device for use in a system having an inlet line from a positive displacement fluid pump, a first outlet line directed to a load and a second outlet line directed to a zero pressure pump reservoir, comprising:
a fixed valve housing having a main bore therein, said bore communicating with the second outlet line;
two nozzles passing through said valve housing and extending into opposite sides of said bore, the openings of said nozzles being directed into said bore diametrically toward one another;
first conduit means in said valve housing for directing fluid from the inlet line to each of said nozzles;
rotary shutter means coaxially positioned within said bore for periodically and alternately, as said rotary shutter

means continuously rotates, closing both of said nozzles, simultaneously, and opening said nozzles to allow flow into the second outlet line, whereby the necessity for a sealing relationship of said rotary shutter means with said valve housing is eliminated, said rotary shutter means comprising a drive shaft and two shutters thereon positioned to simultaneously close and open said nozzles, and including an axial bearing assembly for holding said shaft in coaxial alignment with said bore, wherein said shutters of said rotary shutter means are positioned axially slidable on and keyed to said drive shaft held by said axial bearing assembly to allow axial as well as rotative movement of said shutters relative to and with said drive shaft, said shutters being urged by a spring disposed in said drive shaft against a non-rotating axially movable piston, said piston being actuated by a differential pressure upstream and downstream of a restriction positioned in the first outlet line directed to the load;

second conduit means for directing fluid from each of said first conduit means to the first outlet line; and

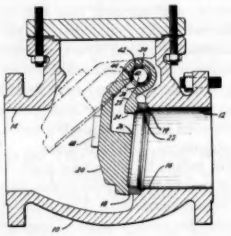
check valve means permitting flow from the inlet line into the first outlet line only when said nozzles are closed.

4,265,268

MODULATING FLOW CONTROL VALVE ASSEMBLY

Heinz K. Hetz, Holicong, Pa., assignor to Yarway Corporation, Blue Bell, Pa.

Filed Feb. 1, 1980, Ser. No. 117,389
Int. Cl.³ G05D *7/01*
U.S. Cl. 137—117 **15 Claims**



1. A modulating flow control valve assembly comprising:

a valve body having an inlet, an outlet, a main fluid passage extending from said inlet to said outlet, and a valve seat formed in said main fluid passage;

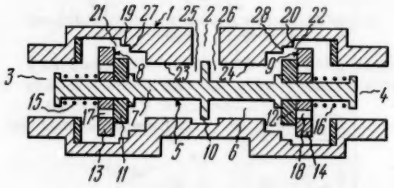
a valve member having a face shaped and sized to cooperate with said valve seat and a bypass fluid passage extending from an inlet in said face to an outlet; and, mounting means for mounting said valve member within said valve body for pivotal movement about an axis transverse to said fluid passage to move said face of said valve member into and out of contact with said valve seat, said mounting means including a discharge passage having an inlet which selectively communicates with said outlet of said bypass fluid passage from a maximum when said face of said valve member is in contact with said valve seat to a minimum when said face member is spaced from said valve seat a predetermined distance.

4,265,269

DEVICE FOR AUTOMATICALLY CUTTING OFF DAMAGED BRANCHES OF PNEUMATIC AND HYDRAULIC SYSTEMS

Vladimir I. Dolberg, ulitsa Khalturina, 8, kv. 9; Igor V. Yarovoi, ulitsa Primakova, 12, kv. 74, and Mikhail I. Dronin, ulitsa Zygina, 42, kv. 37, all of Poltava, U.S.S.R.

Filed Apr. 9, 1979, Ser. No. 28,396
Int. Cl.³ G05D *7/00*
U.S. Cl. 137—118 **4 Claims**



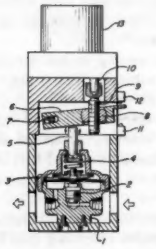
1. A device for automatically cutting off damaged branches of pneumatic or hydraulic systems, comprising: a casing having an inlet chamber and outlet chambers communicating with each other through a passage; stops provided within said casing in the form of projections inwardly extending from the side of the passage; a pilot valve arranged freely for axial movement in the passage of said casing and including a rod carrying at its ends main pistons which define with said casing shut-off valves of the outlet chambers when said pilot valve is in an axially displaced position, each of said main pistons including a seat secured to the rod of said pilot valve and a perforated shut-off member normally urged by a spring against said seat and interacting with a respective one of said stops upon movement of said pilot valve; an additional piston secured to the rod of said pilot valve between the main pistons and having an area smaller than the area of each of the main pistons, said additional piston defining together with said casing a throttle between the inlet chamber and the outlet chamber located in the direction of movement of said pilot valve, while the respective main piston of said pilot valve forms, together with said casing, a throttle between the inlet chamber and the outlet chamber located opposite to the displacement of said pilot valve.

4,265,270

REMOTE-CONTROLLED PRESSURE REGULATOR

Ryozo Satoh, Yamato, Japan, assignor to Tel-Thermco Engineering Co., Ltd., Yokohama, Japan

Filed Mar. 4, 1980, Ser. No. 127,005
Int. Cl.³ G05D *11/06*
U.S. Cl. 137—505.39 **2 Claims**



1. A remote-controlled pressure regulator comprising

(a) a pressure-regulating unit, which has a load spring,

(b) a connecting shaft, which has an inner end and an outer end, which is operatively associated with the pressure-

regulating unit so as to permit axial movement of the connecting shaft, and which is operatively associated with the load spring at the inner end of the connecting shaft so as to increase loading of the load spring upon axial movement of the connecting shaft in one axial direction, and so as to decrease loading of the load spring upon axial movement of the connecting shaft in an opposite direction,

(c) an arm, which is pivotally supported at one end of the arm, and which engages the outer end of the connecting shaft at an intermediate portion of the arm so as to effect axial movement of the connecting rod so as to increase loading of the load spring upon pivotal movement of the arm in one pivotal sense, and so as to decrease loading of the load spring upon pivotal movement of the arm in an opposite sense,

(d) a stepping motor, which has an output shaft that is operatively connected to the arm so as to effect pivotal movement of the arm in opposite pivotal senses, as the output shaft is driven in opposite rotational senses by the stepping motor, and

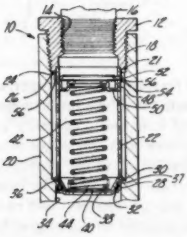
(e) a pair of limit switches, which are respectively mounted to the framework so as to be engaged by the arm, at one extreme of a range of pivotal movement of the arm, and which are operatively associated with the stepping motor.

4,265,271

RELIEF VALVE

Borje O. Rosaen, 4031 Thornoaks Dr., and Dale P. Fosdick, 3000 Hunting Valley Dr., both of Ann Arbor, Mich. 48104

Filed Aug. 20, 1979, Ser. No. 68,009
Int. Cl.³ F16K *15/02*
U.S. Cl. 137—540 **6 Claims**



1. A relief valve for use with a fluid system comprising:

a fluid fitting having a throughbore, first means formed on the fitting for connecting said fitting to a fluid connector on a fluid system and second means formed on the fluid fitting for connecting said fluid fitting to a second fluid connector on the fluid system whereby the fitting through bore fluidly communicates with one of the fluid connectors;

a valve seat having a fluid passageway and means for securing said valve seat to said fitting;

a valve member movable between a closed position in which the valve member abuts against the valve seat and prevents fluid flow through the valve seat passageway and open positions in which said valve member is spaced apart from said valve seat to permit fluid flow through said valve seat passageway and also through said fluid fitting through bore;

means for resiliently urging said valve member toward its closed position;

an elongated tube secured to said fluid fitting, said valve seat being secured to one end of the tube, said resilient means being positioned within the interior of the tube;

a retainer;

means for securing said retainer within the interior of the tube at a position spaced from said end of said tube so that said resilient means is entrapped between the retainer and said valve member;

wherein said means for securing said retainer to said tube further comprises means for longitudinally adjustably securing said retainer to said tube to thereby vary the compression of said resilient means; and

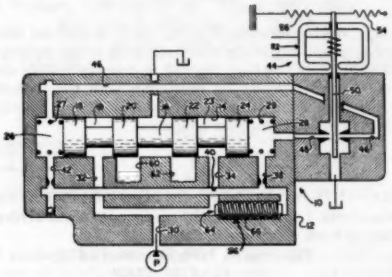
wherein said tube has a plurality of longitudinally spaced and diametrically opposed apertures and wherein said adjustable securing means further comprises a pin extending through a pair of diametrically opposed apertures in said tube.

4,265,272

TRANSIENT START-UP ELIMINATOR FOR PRESSURE PILOTED VALVE

Michael A. Klimowicz, Kalamazoo, and Charles R. Cornell, Battle Creek, both of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 1, 1979, Ser. No. 80,963
Int. Cl.³ F15B *13/042;* **F16K** *31/40, 31/383*
U.S. Cl. 137—625.62 **27 Claims**



10. A control valve for controlling a flow of control fluid comprising a valve body, first and second fluid chambers disposed in said valve body, first fluid passageway means disposed in said valve body for directing pressurized control fluid to said first and second fluid chambers, a valve member located in said valve body for controlling the flow of pressurized control fluid from the valve body, said pressurized fluid in said first fluid chamber biasing said valve member in a first direction, said pressurized fluid in said second fluid chamber biasing said valve member in a second direction opposite said first direction and a viscosity sensitive restriction disposed in said first fluid passageway and through which said control fluid is directed to said first and second fluid chambers, said viscosity sensitive restriction maintaining substantially equal pressure in said first and second chambers upon initial pressurization thereof.

4,265,273

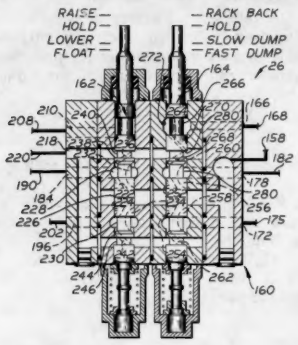
HIGH PRESSURE IMPLEMENT CIRCUIT FOR LOADER WITH SLOW AND FAST DUMP POSITION

Wayne A. Peterson, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 967,345, Dec. 7, 1978, Pat. No. 4,199,293, which is a continuation of Ser. No. 775,062, Mar. 7, 1977, abandoned. This application Oct. 1, 1979, Ser. No. 80,646
Int. Cl.³ F15B *13/07*
U.S. Cl. 137—625.68 **4 Claims**

1. A valve comprising a valve body and a valve spool movable therein, wherein the body defines a pilot supply pressure port, a first port, a second port and a tank port, and wherein the spool defines a first passage means for providing communication between the pilot supply pressure port and first port as the spool is moved in one direction to a first position relative to the body, wherein the spool further defines means for communi-

cating said first port and said tank port, said communicating means including a means for restricting communication between the first port and tank port, said means for restricting determining pressure buildup in the first port with the spool in said first position, wherein the spool further defines a second



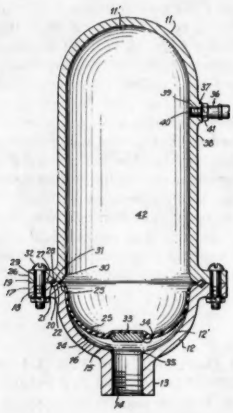
passage, further movement of the spool in said one direction providing blocking of the communicating means including the means for restricting from the tank port and providing communication of the means for restricting with the second port through the second passage, with communication between the pressure port and first port continued.

4,265,274

PULSATION DAMPENER FOR LOW OUTPUT SYSTEMS

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Incorporated, Chatsworth, Calif.

Filed Sep. 4, 1979, Ser. No. 72,439
Int. Cl.³ F16L 55/04
U.S. Cl. 138—30 **4 Claims**



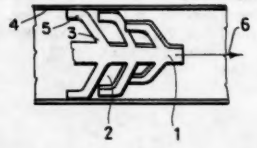
1. A low output pulsation dampener device comprising, in combination, an upper generally cylindrical shell part and a lower generally cylindrical shell part, each of said parts including at one end a generally hemispherical end and at the other end a radially directed flange, said flanges being disposed in juxtaposition, and including opposed annular registering groove portions, a separator assembly interposed between said shell parts, said separator assembly comprising a resilient elastomeric member having an enlarged annular bead sealingly clamped between said registering annular grooves, clamp means interposed between said flanges maintaining said bead in compressed relation within said grooves, a liquid port formed in said lower shell part, a valve member carried by said bladder and shiftable toward and away from said liquid port responsive to pressure variations in said liquid port, a gas charging valve formed in said upper shell part, gas under pressure disposed within said upper shell part for maintaining said valve member in a normally seated position on said valve seat, said device being characterized by the volume of said upper shell part comprising substantially three or more times the volume of said lower part and by the lower shell part comprising a corrosion resisting metallic material and said upper shell part comprising a different and less expensive metallic material.

4,265,275

INTERNAL FIN TUBE HEAT EXCHANGER

Laszlo Heller; Laszlo Forgo; Istvan Papp; Janos Bodas; Gyula Kovacs, all of Budapest, and Karoly Laszlo, Jaszbereny, all of Hungary, assignors to Transelektro Magyar Villamossagi Kulkereskedelmi Vallalat, Budapest, Hungary

Continuation of Ser. No. 811,903, Jun. 28, 1977, abandoned. This application Jun. 28, 1979, Ser. No. 52,797
Claims priority, application Hungary, Jun. 30, 1976, EE 2429
Int. Cl.³ F28B 3/02
U.S. Cl. 138—38 **1 Claim**



1. An internal fin tube heat exchanger, comprising a cylindrical tube, and inside the tube a resilient metal strip that is cut to provide a central strip and a plurality of ribs in the form of strips extending from both side edges of said central strip at an acute angle to the length of the central strip, the free ends of the ribs bearing resiliently against the inner surface of the tube, said strip being twisted whereby said ribs contact said tube in a helical pattern, said ribs terminating in feet that are parallel to said central strip and that extend from the ends of said ribs in the same axial direction as the ribs are inclined from the central strip and that are in heat exchange contact with the inner surface of said tube, said ribs being cut from said strip with space between them, each said rib and its associated said foot being coplanar and being disposed substantially in a radial plane of said cylindrical tube.

4,265,276

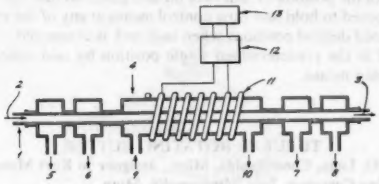
PLASTIC TUBE HAVING A CROSSLINKED THIN LAYER ON THE SURFACE

Kenji Hatada; H. Kobayashi, and Miyoshi Yokura, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 948,707, Oct. 5, 1978, abandoned. This application Jan. 10, 1980, Ser. No. 110,836
Claims priority, application Japan, Oct. 14, 1977, 52-122529
Int. Cl.³ F16L 9/12
U.S. Cl. 138—177 **4 Claims**

1. Polyvinyl chloride tube for carrying a fluid, said tube having a body portion composed of polyvinyl chloride mixed with a plasticizer or other additive which tends to migrate from said body portion to said fluid, said tube having a crosslinked thin layer on its inner surface, said layer having a critical

thickness of about 0.1 to about 1 micron thereby substantially reducing the migration of said plasticizer or other additive



from the body portion of said polymeric tube into the fluid located in said tube.

4,265,277

WEAVING MACHINE HAVING NOISE ATTENUATING MEANS

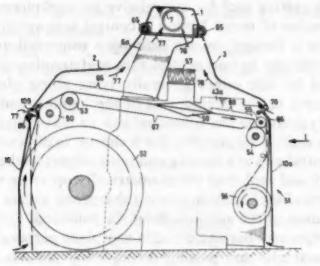
Heinz Baumann, and Charles Caille, both of Winterthur, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Nov. 13, 1978, Ser. No. 959,477

Claims priority, application Switzerland, Nov. 17, 1977, 14038/77

Int. Cl.³ D03D *49/00*; G10K *11/16*

U.S. Cl. 139—1 R **9 Claims**



1. A weaving machine supported on a floor and having a warp beam end, a cloth beam end, a cover over a weaving plane between said ends to attenuate noise, a suspension device located at one of said ends and a curtain freely suspended from said suspension device at said one end to extend loosely along an outer side of a beam at said end and extending to points near the floor, said curtain being of multi-part construction to define a plurality of flaps to permit lifting to provide access to the machine.

4,265,278

VENTILATING SYSTEM FOR A WEAVING MACHINE

Kurt Jassniker, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

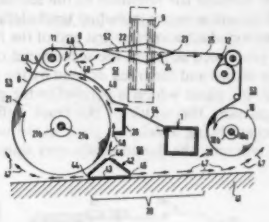
Filed Jul. 17, 1979, Ser. No. 58,244

Claims priority, application Switzerland, Jul. 17, 1978, 7686/78

Int. Cl.³ D03J *1/02*

U.S. Cl. 139—1 C **9 Claims**

1. The combination with a weaving machine having a machine frame, a warp beam mounted at one end of said frame, a cloth beam mounted at an opposite end of said frame and means for directing warp yarns from said warp beam through a weaving plane to said cloth beam; a ventilation system comprising at least one air supply duct disposed below said weaving plane between said warp beam and said cloth beam, said duct having one set of apertures for directing a first flow of air below at least one of said warp beam and said cloth beam to an area outside and adjacent said respective end of said machine



and a second set of apertures for directing a second flow of air into the interior of said machine below said weaving plane.

4,265,279

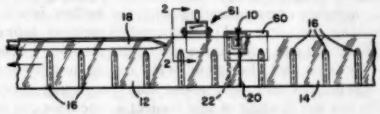
PACKAGE FOR MAINTAINING ASEPSIS OF A STERILE WEB OF BAGS AND METHOD OF USING

Roy J. Weikert, 2000 Schlater Dr., Sidney, Ohio 45365

Filed Aug. 6, 1979, Ser. No. 64,304

Int. Cl.³ B65B *55/04*

U.S. Cl. 141—10 **11 Claims**



1. A package for maintaining the sterility of new and expiring webs of tubular material having sterile interiors while transferring a filling nozzle from said expiring to said new web comprising:

an inner sheet adapted to contact and sterilize opposed inner surfaces of new and expiring webs of tubular material,

a first outer sheet adapted to overlie and sterilize an outer surface of a new web substantially opposite said inner sheet,

a second outer sheet adapted to overlie and sterilize an outer surface of an expiring web substantially opposite said inner sheet, and

means carried by one of said outer sheets for forming an opening through walls of new and expiring webs with which said package is engaged to allow the sterile transfer of a filling nozzle from the expiring to the new web of tubular material.

4,265,280

CONNECTOR MEMBER FOR SEALED CONDUITS

David W. Ammann, Boulder, Colo., and Daniel B. Granzow, Ingleside, Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

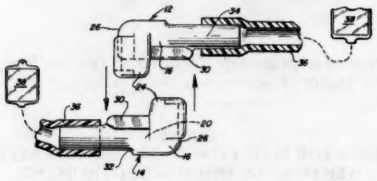
Filed Jan. 23, 1979, Ser. No. 5,749

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—98 **17 Claims**

9. A connector element for providing sealed, sterile connection with a second connector element of similar design, said connector element comprising a hollow, transparent housing, the hollow interior of said housing being sealable from the exterior, a flat section of said housing wall comprising an opaque wall portion separating the hollow housing interior from the exterior and being sealable by connection to said second connector element in facing contact with a corresponding opaque wall portion of the second connector element, and openable through said connector elements upon exposure to of said opaque wall portions to radiant energy, thereby forming

an edge-sealed aperture through said opaque portions and providing a virtually sterile connection through said connector, the improvement comprising: retention means as part of said connector element for retention to the second connector elements, said retention means including track-defining gripper arm means positioned adjacent the first end of the housing, and flange means positioned adjacent the second end of said housing, said flange means and the track defined by the gripper arm means occupying a plane which is parallel to the plane of said opaque wall portion, the width of the track defined by the gripper arm means being at least as great as the width of said flange means, whereby the flange means may slideably fit into



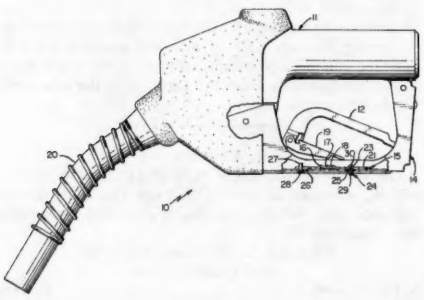
the corresponding gripper arm means of the second connector element, and the gripper arm means may slideably receive corresponding flange means of the second connector element, for sealing of the two connector elements into a single connector member with the opaque wall portion in facing contact; a conduit member communicating with the hollow interior of said housing, the outer end of said conduit member defining a frangible closed end wall, and a projecting member extending outwardly from said closed end wall, and an annular area of weakness in said end wall about said projecting member, whereby manual bending of said projecting member can cause the rupture of said end wall to permit the opening of the outer end of said conduit member.

4,265,281

REMOVABLE RACK FOR A LIQUID DISPENSING NOZZLE

David A. Oberrecht, Cincinnati, Ohio, assignor to Dover Corporation, Del.

Filed Oct. 31, 1978, Ser. No. 956,369
Int. Cl.[3] B67D *5/37*
U.S. Cl. 141—392 **15 Claims**



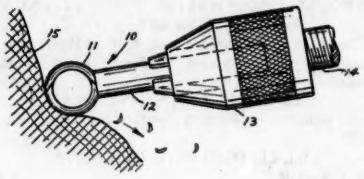
1. A liquid dispensing nozzle including a body, flow control means to control the rate of flow through said body, a guide mounted on said body, a rack removably mounted on said guard, said rack having a plurality of means for selectively holding said flow control means in each of a plurality of predetermined desired positions to control the rate of flow through said body, releasable retaining means for connecting said rack to said guard in a predetermined single position on said guard, longitudinally aligning means on said rack and said guard for cooperation with each other to longitudinally align said rack on said guard when said rack is connected to said guard in the predetermined single position by said releasable retaining means, and cooperating means on said guard and said rack to control the position of said rack on said guard so that said rack is disposed to hold said flow control means at any of the predetermined desired positions when said rack is connected to said guard in the predetermined single position by said releasable retaining means.

4,265,282

TUBULAR ROTATING CUTTER

John O. Lenz, Coon Rapids, Minn., assignor to Kurt Manufacturing Company, Inc., Minneapolis, Minn.

Filed Nov. 13, 1979, Ser. No. 93,188
Int. Cl.[3] B27G *13/00*
U.S. Cl. 144—219 **4 Claims**



1. A cutting tool for use relative to workpieces comprising an annulus of metal having a central axis around which the annulus is formed, means defining a rotational axis generally perpendicular to said central axis, said annulus of metal being defined by side edges generally lying along planes that are transverse to the central axis of the annulus and that are inclined relative to the rotational axis so that the cutting planes form a wall of the annulus that is shorter in direction parallel to the central axis at a leading end with respect to the direction of feed of said tool than the diametrically opposite wall portion, portions of said side edges being sharpened so that with respect to rotation of the annulus about the rotational axis the leading side edges are sharpened and in any plane perpendicular to the rotational axis and passing through the annulus, the leading sharpened edge is at a greater radius from the axis of rotation than the rotationally trailing side edge of the wall portion of the annulus on which the sharpened edge is formed.

4,265,283

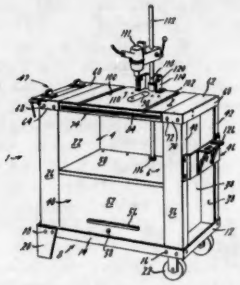
WORK BENCH STRUCTURE

Edward M. Nash, Michigan City, Ind., and Edward M. Johnson, Jr., Matteson, Ill., assignors to The Triangle Corporation, Grant Park, Ill.

Filed Jan. 2, 1979, Ser. No. 589
Int. Cl.[3] B27C *5/10;* **S27C** *9/00*
U.S. Cl. 144—286 R **9 Claims**

1. A workbench construction adaptable for use with a plurality of removable electrically powered hand tools each having a different cutting device, said construction including: a rectangular base member; a pair of vertical support members extending upwardly from opposite side portions of said base member, each having a width substantially coextensive with the associated side portion of said base member and each being generally channel-shaped in horizontal cross-section; a normally horizontally disposed top member selectively pivotally supported along a horizontal axis extending through a center portion thereof, said top member being supported between respective upper end portions of said pair of vertical support members and at opposite ends of said horizontal axis by pivot means; an end cap member attached to the top of each of said vertical support members, each end cap member having a horizontal planar portion substantially coplanar with said top member when said top member is in a horizontal position;

means on said end caps and said top member defining said pivot means, said means on said end caps and said top member being disposed intermediate the width of said support members



and said end caps; said top member having an aperture therein and mounting means attached to the underside of said top member for mounting one of said plurality of tools with the cutting device being extendable through said aperture.

4,265,284

WORK BENCH

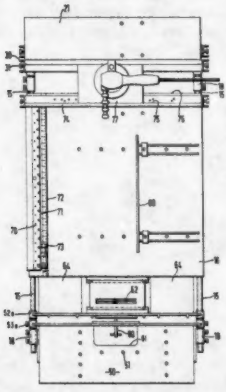
George O. Taylor, Guildford, England, assignor to Bondgrade Limited, Slough, England

Filed Jul. 7, 1978, Ser. No. 922,680

Claims priority, application United Kingdom, Jul. 7, 1977, 28642/77

Int. Cl.[3] **B27C** *9/02*

U.S. Cl. 144—287 **8 Claims**



1. A work bench comprising, in combination:

(a) a rigid support;

(b) a main, substantially flat topped, working surface mounted on said support and having opposite ends;

(c) a pair of laterally space apart, longitudinal guide rods extending parallel to one another from each end of the working surface;

(d) a clamping member slidably mounted on said pair of guide rods for longitudinal movement therealong;

(e) means for locking said clamping member in a variety of positions therealong; and

(f) a screw operated device mounted on said clamping member and being operable to clamp a tool against the adjacent end of the working surface.

4,265,285

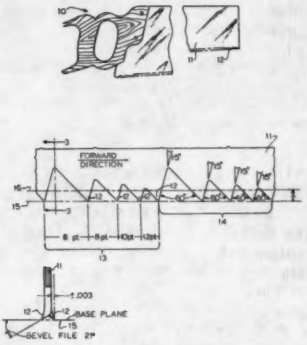
COMBINATION CROSS AND RIP CUT HANDSAW

William G. Fodor, Blairs, Va., assignor to Sandvik, Inc., Greensboro, N.C.

Filed Mar. 18, 1980, Ser. No. 131,462

Int. Cl.[3] **B27B** *21/00*

U.S. Cl. 145—31 R **6 Claims**



1. A handsaw having repeating identical groups of plural teeth, within each group the teeth having gradually diminishing pitch and depth in the forward direction, each group having at least three teeth of different pitch within the range of 12 to 6 points, the teeth comprising each group being alternately set and bevel filed with the surface of the beveled surface of each tooth in all groups being at the same angle with respect to the plane of the opposed side surface of the tooth, with the set of the teeth being equal so that all teeth of all said groups extend laterally to the same extent, the included gullet angle for each tooth in all the groups being the same and the leading edge of each tooth in all the groups having the same negative forward rake angle and the points of the teeth of all the groups terminating on a common cutting line of the teeth in a plane normal to the plane of the blade.

4,265,286

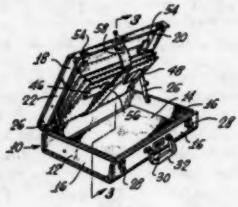
ATTACHE CASE WITH REMOVABLE FILE FOLDER

George Rapoport, 644 S. Saltair, Los Angeles, Calif. 90049

Filed Jul. 19, 1979, Ser. No. 58,796

Int. Cl.[3] **A45C** *3/02*

U.S. Cl. 150—1.6 **8 Claims**



8. An attache case having a base section formed by a first side panel and four walls arranged in a rectangular configuration, a lid section including a second side panel and having a closed position in which it engages said base section and combines therewith to form a complete box-like enclosure, hinge means for pivotally connecting said lid section to said base section whereby said lid section is movable between said closed position and an open position, latch means for releasably securing said lid section in said closed position, and a removable file folder with a front panel, a back panel, an open top

end, a closed bottom end and a cover flap that can be folded over said top end in an in-use position, said file folder being receivable within said lid section with said cover flap in a stored folded-back position between said back panel and said lid section to expose said top edge, wherein the improvement comprises:

securing means for releasably securing said back panel to said lid along said top end thereof with said cover flap in said folded-back position, said securing means comprising at least two flexible tabs each attached along one edge thereof to the inner surface of said second side panel and extending from said one edge over said top end of said file folder toward said hinge; and

means for releasably holding said bottom end of said folder against said second side panel.

4,265,287

PNEUMATIC TIRE HAVING ANTI-TRANSVERSE SKID PROPERTY FOR VEHICLES WHICH RUN AT HIGH SPEED UNDER HEAVY LOAD

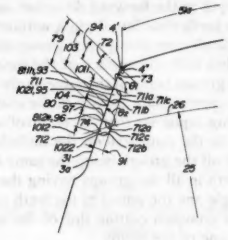
Masaru Abe, Sayama, and Yoshihiro Sakai, Kawasaki, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Aug. 24, 1979, Ser. No. 69,406

Claims priority, application Japan, Aug. 24, 1978, 53-102995

Int. Cl.³ B60C *11/04*

U.S. Cl. 152—209 R **12 Claims**



1. In a pneumatic tire having an anti-transverse skid property for vehicles which run at a high speed under a heavy load, comprising a pair of bead portions, a toroidal-shaped carcass extending across said bead portions, a tread rubber superimposed about said carcass, a tire sidewall connected through two side ends of said tread rubber, that is, shoulders to said tread, and depressions provided in said tire sidewall and for circumferentially dividing said tire sidewall into a number of lands, the improvement which comprises a shoulder side groove provided in the lands of the tire sidewall and improving the anti-transverse skid property of the tire and in which said shoulder side groove has such a sectional configuration that its depth is 0.0070 to 0.0255 times the tire sectional height and that the groove wall near the shoulder is inclined at an angle of 75° to 120° with respect to the tire sidewall outer surface, said shoulder side groove has such an arrangement that the total sum of those lengths of a crossing line between the groove wall near the shoulder and the tire sidewall outer surface, that is, the edge lines of the shoulder side groove which are projected onto a plane perpendicular to both the radial plane containing the rotational axis of the tire and the tire equatorial plane for dividing said land into two halves is made larger than the total sum of those lengths of said edge line which are projected onto the radial plane containing the rotational axis of the tire, said shoulder side groove is located at a position distant apart from said shoulder toward the bead portion along the tire sidewall outer surface by a distance which is at least 0.0123 times the tire sectional height, that portion of said groove edge lines which is the nearest to the bead portion is located within a limited range which is distant apart from a crossing point between an arc having a radius of curvature which has a center on a tire width center line in the radial plane containing the rotational axis of the tire and which is 1.55 times larger than the tire maximum sectional width and passing through the groove base at a crown portion groove depth measuring position and the tire sidewall outer surface by a distance along the tire sidewall surface which is 0.0123 to 0.0483 times the tire sectional height whereby the anti-transverse skid property of the tire at its wear end is improved, and those portions of said groove edge lines which are located between a position which is distant apart from said shoulder toward said bead portion along the tire sidewall outer surface by a distance which is 0.80 times the crown portion groove depth and said limited range and which are the nearest to the bead portion are arranged such that the total sum of those lengths of said groove edge lines which are projected onto a plane perpendicular to both said radial plane containing the rotational axis of the tire and said tire equatorial plane is at least 1.1 times larger than the total sum of those lengths of said groove edge lines which are projected onto said radial plane containing the rotational axis of the tire whereby the anti-transverse skid property of the tire after the middle wear period is improved.

4,265,288

PNEUMATIC SAFETY TIRE WITH EXCELLENT LONG-RUNNING ABILITY AFTER PUNCTURE EMPLOYING RUBBER HAVING SPECIFICALLY DEFINED PROPERTIES FOR SIDEWALL INSERTS AND TREAD

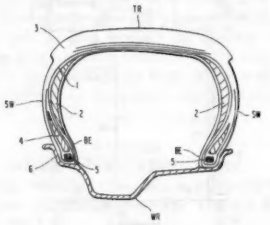
Yoshio Kaneko, Tokorozawa; Makoto Yamauchi, Fussa; Shinji Shiozawa, Kodaira; Yoshihiro Hayakawa, Akigawa, and Fumio Banba, Kodaira, all of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Nov. 8, 1979, Ser. No. 92,302

Claims priority, application Japan, Nov. 20, 1978, 53/143001

Int. Cl.³ B60C *17/00, 11/00, 9/20*

U.S. Cl. 152—209 R **5 Claims**

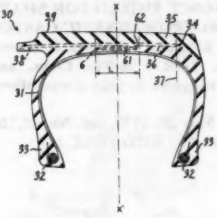


1. A pneumatic safety radial tire with excellent long-running ability after puncture, comprising a pair of annular bead portions, a carcass extending across the two bead portions, an annular tread portion formed on the outer peripheral surface of the carcass, a pair of sidewalls between one of the bead portions and corresponding one of opposite edges of said tread portion, a pair of rubber reinforcing members mounted to said sidewalls for enhancing rigidity thereof so as to give an ability to bear load on the tire independently, and a tread reinforcing belt layer embedded in tread rubber forming said tread portion while surrounding said carcass, said rubber reinforcing members consisting of an elastomer having a JIS hardness of not less than 70, a tensile stress (Mod_{25}) of not less than 10 kg/cm^2 after an aging test for 24 hours in an inactive atmosphere at 140° C.±1° C., and a repulsive elasticity by Dunlop tripsometer of not less than 65%, while said tread rubber consisting of an elastomer having a repulsive elasticity by Dunlop tripsometer of not less than 40% together with regular characteristics.

4,265,289
TIRE WITH ASYMMETRIC REINFORCEMENT EMPLOYING CARCASS EXPANSION CORRECTION BLOCK

Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 19,181, Mar. 9, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 117,030
Claims priority, application France, Mar. 10, 1978, 78 7387
Int. Cl.³ B60C *11/10, 9/20, 9/08*
U.S. Cl. 152—209 A **16 Claims**



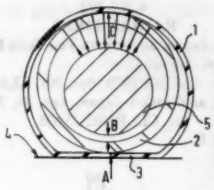
1. A tire with a carcass reinforcement anchored on both sides to at least one bead ring and with a tread reinforcement which has a slight meridian curvature, which is asymmetrical with respect to the equatorial plane, which is parallel to the carcass reinforcement along an equatorial zone and which is formed of at least two superimposed plies of wires or cables that are parallel to each other in each ply and crossed from one ply to the other forming angles at most equal to 45° with the longitudinal direction of the tire, characterized by the fact that between the carcass reinforcement and the tread reinforcement there is arranged a correction block formed of two superimposed plies of wires or cables of low extensibility which are parallel to each other in each ply and crossed from one ply to the other forming with the longitudinal direction angles of opposite sign, each being both other than zero and less in absolute value than one-third of the smallest angle used in the tread reinforcement; the correction block being parallel to the carcass reinforcement, preferably centered on the equatorial plane and of a width less than the width of the equatorial zone along which the tread reinforcement is parallel to the carcass reinforcement and further characterized by the fact that the wires or cables of low extensibility of the correction block have a relative elongation less than 0.2% under a load equal to 10% of their rupture load.

4,265,290
TIRE AND WHEEL RIM ASSEMBLIES

William L. Jackson, Sutton Coldfield, England, assignor to Dunlop Limited, London, England

Filed May 31, 1979, Ser. No. 44,323
Claims priority, application United Kingdom, Jun. 6, 1978, 26376/78
Int. Cl.³ B60C *17/04*
U.S. Cl. 152—330 RF **21 Claims**

1. A pneumatic tire and wheel rim assembly in which the tire has a tread portion and two sidewalls, each sidewall having a tire bead located on a respective bead seat of the wheel rim, the assembly containing positioning means and an emergency support hoop which is sufficiently rigid to support that part of the weight of the vehicle applied to the assembly, the hoop being located in the chamber defined by the tire and wheel rim by means of said positioning means, the relative dimensions of the support hoop and the tire and their disposition relative to each other being such that the support hoop remains out of contact with the inner surface of the tire when the tire is at a normal inflation pressure, and the radius of the radially inner surface of the support hoop is greater than the radius of the wheel rim, whereby when the tire becomes deflated, the positioning means allows the radially outer surface of the support hoop to contact the radially inner surface of the tread portion

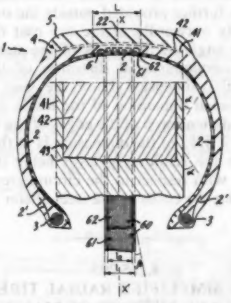


at the lowest and highest parts of the hoop only, the support hoop remaining out of contact with the wheel rim, and rotating with the tire.

4,265,291
RADIAL CARCASS TIRE EMPLOYING CARCASS EXPANSION LIMITING BLOCK

Jean Pommier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France

Continuation-in-part of Ser. No. 19,179, Mar. 9, 1979, abandoned. This application Jan. 30, 1980, Ser. No. 117,035
Claims priority, application France, Mar. 10, 1978, 78 7385
Int. Cl.³ B60C *9/20, 9/08*
U.S. Cl. 152—352 R **12 Claims**



1. A tire with a radial carcass reinforcement anchored on both sides to at least one bead ring and with a tread reinforcement formed of at least two superimposed plies of wires or cables parallel in each ply and crossed from one ply to the other forming angles greater than 30° with the longitudinal direction of the tire, said tread reinforcement having a meridian curvature less than that of the radial carcass reinforcement and being parallel to the radial carcass reinforcement along an equatorial zone of a width less than that of the tread reinforcement, characterized by the fact that between the radial carcass reinforcement and the tread reinforcement there is arranged a limiting block formed of two superimposed plies of wires or cables of low extensibility which are parallel to each other in each ply and crossed from one ply to the other forming with the longitudinal direction angles of opposite sign, each being both other than zero and less in absolute value than one-quarter of the smallest angle used in the tread reinforcement, the width of the limiting block being at most equal to the width of the equatorial zone along which the tread reinforcement is parallel to the radial carcass reinforcement, the limiting block being arranged in the equatorial zone and centered on the equatorial plane and further characterized by the fact that the wires or cables of low extensibility of the limiting block have a relative

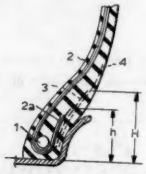
elongation less than 0.2% under a load equal to 10% of their rupture load.

4,265,292

RADIAL TIRES

Teruo Inoue, Yao, Japan, assignor to The Toyo Rubber Industry Co., Ltd., Osaka, Japan

Filed Apr. 20, 1979, Ser. No. 32,103
Claims priority, application Japan, Apr. 24, 1978, 53/48884
Int. Cl.³ B60C *15/06*
U.S. Cl. 152—354 R **4 Claims**



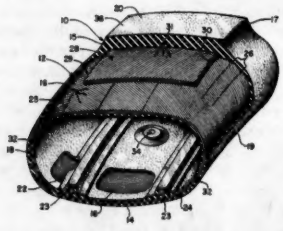
1. A radial tire comprising: a bead core; a carcass ply structure having a plurality of carcass plies made of multi-layered polyester cords, at least part of said plurality of carcass plies being folded around said bead core from the inside of said bead core, with respect to the inside of the tire, to the outside thereof and any remaining carcass plies terminate to the inside or to the radially inner side of the bead core, a steel chafer formed of steel cords and provided outside the folded portions of the carcass plies, and at least one reinforcing layer of organic fiber cords further provided outside the steel chafer and extending radially outwardly of the tire past the end of the steel chafer, the angle of the cords of the steel chafer with respect to the circumferential direction of the tire being 15°–45°, the radial dimension H of the steel chafer being 25–28% of the radial dimension of the inside of the tire, the maximum radial dimension h of the edges of the folded carcass plies being at most 85% of the dimension H of the steel chafer, and the cords in the reinforcing layer being disposed at an angle of 20°–75° with respect to the circumferential direction of the tire crossing the cords of the steel chafer at an angle of at least 10°.

4,265,293

CLOSED TUBE SIMPLIFIED RADIAL TIRE, TIRE/RIM ASSEMBLY AND METHOD OF MAKING SAME

Walter W. Curtiss, Jr., Akron, and Patrick T. O'Flanagan, Lodi, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 929,861, Jul. 31, 1978, abandoned. This application Apr. 18, 1980, Ser. No. 141,709
Int. Cl.³ B29H *17/20*; B60C *9/02*
U.S. Cl. 152—354 R **17 Claims**



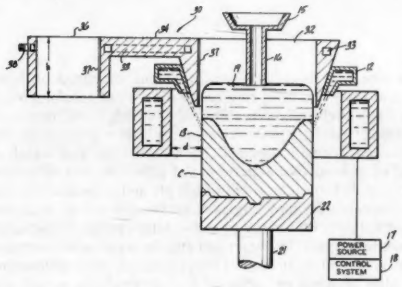
1. A closed tube tire having a carcass ply of substantially parallel cords extending continuously and completely around a circumferentially elongated segment of said tire, said cords of said carcass ply in the crown of said tire being inclined to a plane perpendicular to the axis of revolution of said tire, said cords of said carcass ply in the sidewalls of said tire being substantially radial, said cords of said carcass ply in the base of said tire being oppositely inclined to said plane an amount greater than in the crown of said tire, and in the crown of said tire a belt ply of substantially parallel cords which are oppositely inclined to said cords of said carcass ply in said crown.

4,265,294

DUFLEX IMPEDANCE SHIELD FOR SHAPE CONTROL IN ELECTROMAGNETIC CASTING

Gerhart K. Gaule, Elberon, N.J.; John C. Yarwood, Madison, Conn.; Derek E. Tyler, Cheshire, Conn., and Ik Y. Yun, Orange, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed May 30, 1979, Ser. No. 43,726
Int. Cl.³ B22D *27/02, 11/01*
U.S. Cl. 164—49 **39 Claims**



1. A process for electromagnetically forming molten metal or alloy into cast ingots of desired shape comprising:

establishing a casting zone defining an upstream portion and a downstream portion;

placing an inductor in surrounding relation to said zone;

providing a duplex shield, said shield having a first loop defining a first impedance, and a second loop defining a second impedance connected to said first loop;

positioning said first loop adjacent to said inductor toward the upstream portion of said casting zone while positioning said second loop in spaced apart relation to said first loop, remote from said inductor and outside said casting zone;

passing a current through said inductor to generate an electromagnetic field in said casting zone;

pouring said molten metal or alloy into said casting zone; and

attenuating said electromagnetic field with said duplex shield to provide desired ingot shape control during ingot solidification.

16. A process for electromagnetically forming molten metals or alloys into cast ingots of desired shape comprising pouring of said molten metal or alloy into a casting zone established by an inductor and at least a portion of a non-magnetic shield defining a first impedance, said inductor inducing an electromagnetic field in said casting zone and said shield attenuating said electromagnetic field, the improvement comprising:

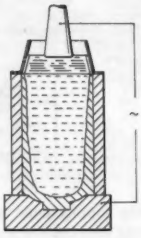
providing a portion of said non-magnetic shield, remote from said inductor and outside said casting zone, defining a second impedance; and,

adjusting the overall impedance of said shield during said casting process by selectively altering the impedance of said portion of said non-magnetic shield remote from said inductor and outside said casting zone.

4,265,295
METHOD OF PRODUCING STEEL INGOTS

Erwin Plöckinger; Gert Kühnelt, both of Kapfenberg; Peter Machner, Leoben, and Heimo Jäger, Bruck a.d. Mur, all of Austria, assignors to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW), Vienna, Austria

Filed Nov. 19, 1976, Ser. No. 743,102
Claims priority, application Austria, Nov. 17, 1975, 8719/75
Int. Cl.³ B22D *27/02, 27/06*
U.S. Cl. 164—52 **2 Claims**



1. An improved method of producing ingots of unalloyed and alloyed steels having an improved primary crystallization reduced ingot segregation and a reduced content of non-metallic inclusions,, comprising the steps of pouring liquid steel into a mold in an amount corresponding at least approximately to that of the preselected weight of the ingot to be produced, then dosing said mold containing the liquid steel with melted slag, confining said melted slag laterally by means of liquid-cooled walls so that a layer of solid slag is formed and maintained adjacent said walls, supplying energy by electric resistance heating by means of at least one consumable electrode to said melted slag during solidification of said liquid steel which forms a partially solidified ingot having a remaining melt, the chemical composition of said consumable electrode being substantially equal to that of the formed steel ingot, the supply of electric energy to the liquid core zone of the already melted slag being at least 120 kilowatt-hours per metric ton of ingot weight so that said liquid core zone of the slag is maintained at a high temperature, the improvement comprising the steps of determining the concentration increase per unit of time of segregation elements in the remaining melt of the ingot and selecting a quantitive composition for the at least one consumable electrode which will supply a concentration of segregation elements in the amount of steel melted off per unit of time lower by the amount corresponding to said increase, said at least one consumable electrode being conical in shape thus having a smaller diameter at one end and a wider diameter at the other end, and melting-off is started at the end of the electrode having the wider diameter.

4,265,296
INVESTMENT CASTING MOLD FORMING APPARATUS

Richard C. Ostrowski, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 21, 1978, Ser. No. 4,112
Int. Cl.³ B22C *13/08*
U.S. Cl. 164—165 **6 Claims**

1. Investment casting mold forming apparatus comprising:

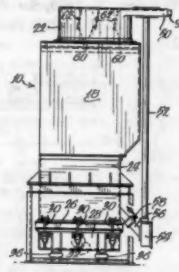
a vertically extending housing (**10**) having a top (**22**) and a bottom (**28**) and an access opening (**20**) intermediate the top and bottom;

a diffuser (**26**) within said housing below said opening and above said bottom;

means (**32**) for introducing a fluid under pressure into said housing between said bottom and said diffuser whereby a fluidized bed of particulate material may be established within said housing above said diffuser; and

means (**50,52,60**) for introducing particulate material into said housing at an elevated position therein above said access opening such that the particulate material may descent within said housing after being introduced thereto;

the interior of said housing in the vicinity of said fluidized

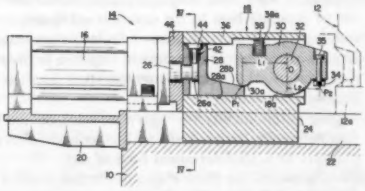


bed and said access opening being unobstructed so that a mold core may be introduced into said housing through said access opening and be coated with particulate material from said particulate material introducing means as it descends therefrom toward said fluidized bed or by immersion in said fluidized bed.

4,265,297
APPARATUS FOR DETACHABLY MOUNTING MOLDS

Kazutaka Asakuma, Zama, and Tsuyoshi Kikuchi, Atsugi, both of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1980, Ser. No. 127,751
Claims priority, application Japan, Mar. 9, 1979, 54/26726
Int. Cl.³ B22D *17/22*
U.S. Cl. 164—303 **7 Claims**



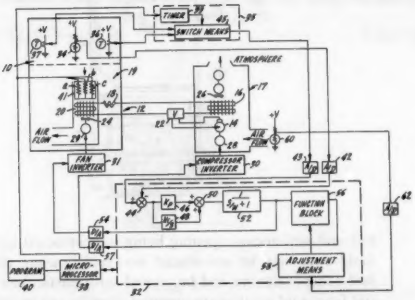
1. Apparatus for detachably mounting mold halves on a die casting machine comprising a casing slidable on a die plate of the die casting machine, a wedge member located within said casing and in slidable contact with the inner surface thereof, the contact frictional force between the wedge member and said inner surface being larger than the sliding resistance between said die plate and the outer surface of said casing, a clamp lever located in said casing to be rotatable about a shaft attached to said casing, said clamp lever having one end in contact with an inclined surface of said wedge member and the other end provided with a clamping member to clamp said mold half positioned in said die plate, hydraulic drive means in engagement with said wedge member to reciprocate said wedge member together with said casing and to reciprocate said wedge member relative to said casing, and means for resiliently urging said one end of said clamp lever againt the inclined surface of said wedge member.

4,265,298

MICROCOMPUTER CONTROL FOR SUPPLEMENTAL HEATING WITH NIGHT SET-BACK

Lee E. Sumner, Jr., Dallastown; Kenneth W. Cooper, York, and Frederic H. Abendschein, Columbia, all of Pa., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 28, 1979, Ser. No. 80,362
Int. Cl.³ F28B *29/00*
U.S. Cl. 165—2 **6 Claims**



6. A method for use in a heat pump and refrigeration system for conditioning a space having a closed refrigerant circuit including a compressor, a condenser, an expansion device, and an evaporator connected respectively in series, said method comprised in the steps of:

sensing the temperature of a space to be conditioned to generate an electrical signal representative of the measured temperature;

setting a first lower reference temperature during the nighttime of the space to be conditioned and setting second higher reference temperature during the daytime to generate a second electrical signal representative of the selected reference temperature;

sensing the temperature of the outdoor atmosphere to generate a third electrical signal representative of the outdoor atmospheric temperature;

providing at least three stages of supplemental electric heaters to generate heat to the conditioned space;

providing a programmed control device to generate a signal to activate the electric heaters in response to the measured temperature, the reference temperature and the outdoor atmospheric temperature;

changing automatically through a set-back device from the first reference temperature to the second reference temperature at a predetermined time of day;

activating one of the three stages of electric heaters through the control device when the measured temperature at a particular sampling time is less than a corresponding calculated temperature for that sampling time for at least two consecutive sampling times; and

controlling through a microprocessor having a program the step of generating the signal to activate the supplemental electric heaters to affect the measured temperature of the conditioned space.

4,265,299

HEAT PUMP CONTROL SYSTEM

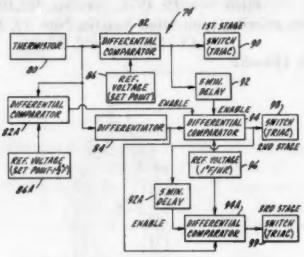
James R. Harnish, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 28, 1979, Ser. No. 79,859
Int. Cl.³ F25B *29/00*
U.S. Cl. 165—12 **6 Claims**

1. In combination with a heat pump of the type including at least one stage of supplemental heat, a control system comprising:

temperature sensing means for sensing the indoor conditioned space temperature;

means for comparing the temperature sensed with a reference temperature to determine the rate of temperature change in said indoor conditioned space temperature; and



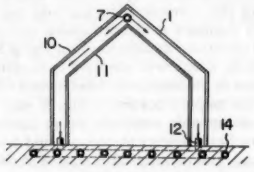
means for initiating supplemental heat following temperature setup of said temperature sensing means only if the rate of temperature change is below some predetermined value.

4,265,300

GREENHOUSE DEVICE

Yoshitane Kurimoto, 4-14, 4-Chome, Ichikawa-Minami, Ichikawa-Shi, Chiba-Ken, Japan

Filed Nov. 8, 1978, Ser. No. 958,884
Claims priority, application Japan, Nov. 10, 1977, 52-135076
Int. Cl.³ A01C *1/00*
U.S. Cl. 165—47 **3 Claims**

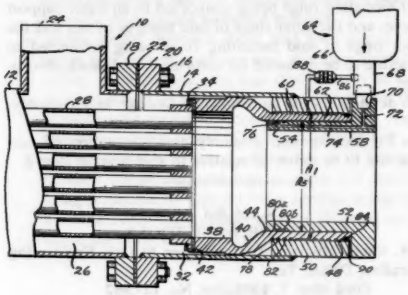


1. A system for generating and conditioning warm air for a greenhouse assembly having a greenhouse section, a double wall structure and an underground piping section, which includes a desulfurizer for gaseous fuel; a warm air generating device comprising a hot air generator in which the gaseous fuel is mixed and combusted with a stoichiometric amount of outside air for generating heated air and a mixer in which the heated air is mixed with relatively cool air for generating the warm air at a temperature suitable for plant growth; a conditioned air generator provided and connected to the outlet of said mixer for measuring the amount of oxygen and toxic gases in the warm air obtained from said mixer, adding oxygen thereto in case of necessity and further heating, cooling and dehumidifying the warm air, and means for routing the warm air passed through the conditioned air generator to the greenhouse section and means for routing the warm air which has not passed through the conditioned air generator to the double wall structure and the underground piping section.

4,265,301
HEAT EXCHANGER SUPPORT CONSTRUCTION

James H. Anderson, 1615 Hillock La., York, Pa. 17403

Continuation-in-part of Ser. No. 674,675, Apr. 6, 1976, abandoned. This application Aug. 15, 1978, Ser. No. 933,879
Int. Cl.[3] F28F 9/00
U.S. Cl. 165—162 14 Claims



1. In a shell and tube type heat exchanger including a bundle of generally parallel heat exchange tubes contained within a shell, means for supporting a plurality of said tubes as a group in spaced-apart relationship which comprises:

a tubular support member engaged between said plurality of tubes,

said support member being located between said plurality of tubes solely by means of its said engagement therebetween,

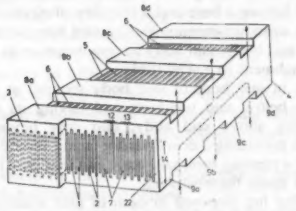
said support member having passage means extending therethrough generally parallel to said plurality of tubes, and

means for holding said plurality of tubes against the exterior of said support member.

4,265,302
HEAT EXCHANGER

Siegfried Förster, Alsdorf; Manfred Kleemann, Quadrath-Ichnedorf; Axel Krauth, Selb; Horst R. Maier, Selb, and Hans-Jürgen Pohlmann, Selb, all of Fed. Rep. of Germany, assignors to Rosenthal Technik AG and Kernforschungsanlage Julich GmbH, both of, Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,271
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1977, 2707290
Int. Cl.[3] F28D 7/00
U.S. Cl. 165—165 11 Claims

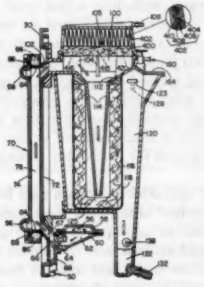


1. A heat exchanger comprising a ceramic body having opposite cover walls; the body having a plurality of elongate flow passages therein which are closed at their ends, the flow passages extend between their ends generally along the direction of extension of the cover walls; the flow passages being arranged in a parallel to each other and in an interleaved relationship, wherein each flow passage has and is defined between opposed side walls thereof which side walls extend toward the cover walls, and the respective side walls of adjacent interleaved passages being disposed and of such length that they overlap the respective side walls of the passages adjacent thereto; the interleaved passages having a staggered relationship to one another, wherein one set of alternate interleaved passages extend along their lengths closer toward one of the cover walls, and the other set of alternate interleaved passages extend closer toward the opposite cover wall of the ceramic body; at least two transversely extending parts of each of the cover walls being absent to expose and permit access through the cover walls to only that set of the passages closer thereto, thus presenting a total of at least four openings for permitting fluid flow of two heat exchange media to flow through respective ones of the two interleaved sets of passages.

4,265,303
LEAKPROOF ADHESIVE SEALING

Joel F. Giurtino, Littleton, and Robert L. Anderson, Boulder, both of Colo., assignors to Cobe Laboratories, Inc., Lakewood, Colo.

Filed Jun. 19, 1978, Ser. No. 916,775
Int. Cl.[3] F28F 3/00
U.S. Cl. 165—166 3 Claims



1. Apparatus for exchanging heat with a pressurized fluid, comprising:

a housing with an interior surface,

inlet and outlet fluid fittings in a back plate that forms said interior surface,

partitioning means inside said housing for forming one or more fluid passages within said housing, said partitioning means having at least one surface facing and spaced from said housing interior surface, said partitioning means surface having a different contour from said housing interior surface, said difference in contours defining a gap between said surfaces,

said partitioning means comprising a corrugated heat-conductive sheet mounted in close proximity to said back plate, said corrugated sheet having ends transversely to said corrugations and sides parallel to said corrugations,

adhesive filling said gap along an elongated zone to prevent fluid within said housing from leaking through said gap,

said adhesive comprising potting material sealing said gap which is between said corrugated sheet and said back plate near said ends of said corrugated sheet,

two elongated openings in said housing along said zone for introducing said adhesive,

each said opening being in said back plate and extending transversely to said corrugations and located near said ends of said corrugated sheet, said openings providing a path for introducing said potting material pured therein to seal in a pair of zones between said corrugated sheet and said housing and thereby provide a fluid compartment between said zones, and

first rows of fingers extending from said back plate along one long side of each of said narrow openings and being received in corrugations of said corrugated sheet, thereby

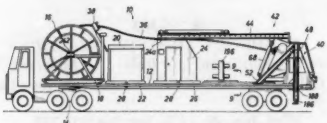
retarding the flow of potting material past the position of said fingers and reducing the size of the zones to be sealed by said material between said corrugated sheet and said back plate.

4,265,304

COILED TUBING APPARATUS

Benton F. Baugh, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed Jun. 6, 1978, Ser. No. 913,118
Int. Cl.³ E21B *15/00, 19/08*
U.S. Cl. 166—77 **29 Claims**



1. Apparatus for operating on a well comprising:

(a) mast means, including a first mast section and a second mast section pivotally joined to said first mast section, wherein said second mast section may be moved about said pivotal joining between an operating configuration in which said second mast section is generally aligned with said first mast section in a generally upright orientation and a non-operating configuration in which said second mast section is tilted relative to said first mast section;

(b) injector means for propelling tubing into or out of a well; and

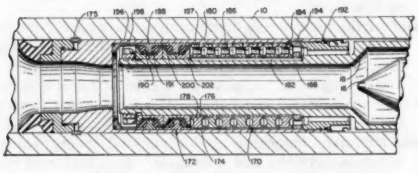
(c) wherein said injector means may be selectively elevated and positioned along said mast means with said second mast section in said operating configuration, and wherein second mast section may be moved to said non-operating configuration while said injector means may be generally upright and positioned generally along said first mast section.

4,265,305

MOUNTING AND SHOCK ABSORBER ASSEMBLY FOR BOREHOLE TELEMETRY APPARATUS

Frederick A. Stone, Durham, and Normand P. Holcomb, Warehouse Point, both of Conn., assignors to Teleco Oilfield Services Inc., Middletown, Conn.

Filed Aug. 27, 1979, Ser. No. 70,154
Int. Cl.³ E21B *47/12;* **F16F** *7/12;* **G01D** *11/10;* **G01L** *19/14*
U.S. Cl. 166—113 **12 Claims**



1. A mounting and shock absorber assembly for borehole telemetry apparatus, including:

first bumper means;

second bumper means following said first bumper means;

a plurality of mounting rings following said second bumper means;

said first and second bumper means and said plurality of mounting rings being in a sequential axial array along the axis of a device to be mounted;

each of said bumper means having an outer ring, an inwardly projecting annular rib, annular elastomeric bumper elements adhered to each side of said rib, a pair of inner rings and an outwardly extending annular rib from each of said inner rings in opposed relationship to said elastomeric bumper elements;

each of said mounting rings having an outer ring, an inner ring, and elastomeric material extending between and being adhered to said rings;

the outer rings of said bumper means and the outer rings of said mounting rings being connected to an outer support sleeve, and the inner rings of said bumper means and the inner rings of said mounting rings being connected to structure to be mounted for suspension and shock absorption;

means defining a flow path for fluid through said assembly; and

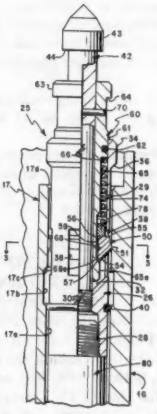
means for locking said assembly against rotation of said structure to be mounted relative to said support sleeve.

4,265,306

LATCH FOR WELL TOOLS

Gregg W. Stout, Humble, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Mar. 7, 1980, Ser. No. 127,952
Int. Cl.³ E21B *23/02*
U.S. Cl. 166—237 **7 Claims**



1. A latch for securing well tools in a landing receptacle of a well flow conductor having a locking recess therein providing a downwardly facing lock shoulder, comprising:

a. a body having a bore and a plurality of circumferentially spaced windows communicating said bore with the exterior of said body, said body having means at its lower end for attachment to a well tool;

b. a core in said bore of said body secured at a location therein below said windows and having its upper end extending above said body, said core having a head thereon providing a downwardly facing shoulder engageable by a running tool, said body and said core forming an annular space therebetween;

c. a locking lug disposed in each of said windows of said body and movable radially therein between inner retracted positions and outer expanded locking positions wherein they are engageable with the downwardly facing lock shoulder of said receptacle, said lugs being additionally movable longitudinally in said windows independently of said radial movement;

d. a lock sleeve slidably mounted about said core and having a flange at its upper end providing a downwardly facing fishing shoulder and a portion of said sleeve initially extending into said body to a point near the lower ends of said windows and having a lock surface thereon engage-

able with the inner surfaces of said locking lugs to maintain the lugs in expanded locking position, said sleeve having an external annular recess above said lock surface and a downwardly facing abutment shoulder intermediate said recess and said fishing shoulder, said sleeve being movable to an upper unlocking position wherein the lower end of said sleeve is above said lugs and said lugs are movable to retracted unlocked position;

e. spring means disposed about said lock sleeve with the upper end thereof engaging said abutment shoulder, said spring means biasing said lugs downwardly in said windows, said lugs being movable upwardly against the force of said spring means to a position where they can retract into said external recess of said lock sleeve; and

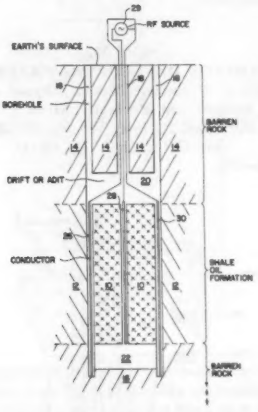
f. means releasably securing said sleeve in its lower locked position supporting said lugs in expanded position and being releasable by upward force applied to said sleeve to move said sleeve to its upper position allowing said lugs to move inwardly to retracted position.

4,265,307

SHALE OIL RECOVERY

Lincoln F. Elkins, Oklahoma City, Okla., assignor to Standard Oil Company, Cleveland, Ohio

Filed Dec. 20, 1978, Ser. No. 971,452
Int. Cl.³ E21B *43/24, 43/247, 43/263*
U.S. Cl. 166—248 **27 Claims**



1. In á process for recovering hydrocabonaceous material from a solid non-freeflowing hydrocarbonaceous material bed in which said bed is heated in situ by applying radio frequency energy thereto to effect dielectric heating of said bed, the improvement wherein said bed is rubblized prior to the application of radio frequency energy thereto, said radio frequency energy being applied by means of conductors inserted into said bed prior to rubblization.

22. A system for in situ heat processing of hydrocarbonaceous earth formations comprising:

conductive means inserted in said formation and electrically bounding a particular bed of said formation on at least two sides thereof;

electrical excitation means for establishing alternating electric fields in said bed, the frequency of said excitation means being selected as the function of the bed dimensions so as to establish substantially non-radiating electric fields which are substantially confined in said bed whereby volumetric dielectric heating of the formations will occur to effect approximately uniform heating of said bed; and

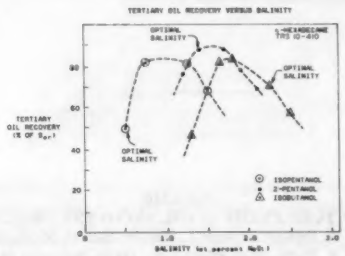
means for rubblizing said bed in situ.

4,265,308

OIL RECOVERY METHOD USING UNIQUE SALINITY FOR OIL RECOVERY SURFACTANT SYSTEM

James H. Hedges, and Gilbert R. Glinsmann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 31, 1979, Ser. No. 71,642
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—252 **17 Claims**



12. A method for recovering oil from an oil-bearing reservoir comprising the steps of:

(a) injecting into said reservoir through at least one injection well an aqueous surfactant system comprising water, electrolyte, surfactant and cosurfactant which system has an optimal salinity at or near a unique salinity for the surfactant-oil combination, said optimal salinity being the salinity concentration at which a microemulsion phase having approximately equal volumes of oil and water forms on mixing the reservoir oil or equivalent with a surfactant system, said unique salinity being the salinity concentration at which maximum oil recovery is obtained for the reservoir oil or equivalent-surfactant combination obtained by the proper selection of the cosurfactant and cosurfactant concentration;

(b) thereafter injecting a drive fluid, thus forcing said oil toward at least one recovery well; and

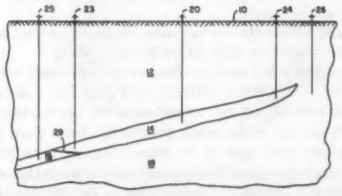
(c) recovering said oil.

4,265,309

EVALUATION AND PRODUCTION OF ATTIC OIL

Robert L. Magnie, Denver, Colo., assignor to Ruel C. Terry, Denver, Colo.

Filed Oct. 17, 1979, Ser. No. 85,532
Int. Cl.³ E21B *43/18, 47/00*
U.S. Cl. 166—252 **6 Claims**



1. In a dipping underground petroleum reservoir devoid of a gas cap, wherein at least one well is located in an up dip portion of the reservoir, a method of estimating the size of the attic portion of the reservoir, comprising the steps of

injecting a suite of gases into the said up dip well,

measuring the quantity of each gas injected into the said reservoir in the said suite of gases,

terminating injection of the said suite of gases,

producing attic oil from thee said up dip well,

measuring the quantity of attic oil produced from the said up dip well,

separating the suite of gases recovered with the said produced oil,

measuring the quantity of each gas in the said suite of gases separated from the said produced oil, then

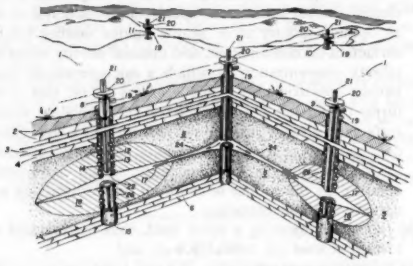
comparing the quantity of each gas in the said recovered and separated suite of gases with the quantity of each gas the said oil is capable of taking into solution when the said oil is positioned in the said reservoir.

4,265,310

FRACTURE PREHEAT OIL RECOVERY PROCESS

Michael W. Britton; William L. Martin; Jack D. McDaniel, and Harry A. Wahl, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 3, 1978, Ser. No. 948,359
Int. Cl.[3] E21B *43/17, 43/24, 43/247*
U.S. Cl. 166—259 **32 Claims**



16. A process for establishing a zone of heated heavy oil having mobility and horizontally traversing a heavy oil reservoir comprising sequentially:

(a) penetrating the reservoir with an injection well bore and a production well bore horizontally separated from each other;

(b) fracturing from the production well;

(c) injecting a hot aqueous fluid at a temperature above 100° C. into the production well to part the fracture zone and impart heat to it;

(d) hydraulically fracturing from the injection well into fluid communication with the production well;

(e) injecting a hot aqueous fluid at a temperature above 100° C. into the injection well at a very high rate and a pressure sufficient to part the formation along the fracture system between the wells while producing fluids from the production well such as to effect channel flow of liquids through the parted fracture system between the wells and to form a heated permeable zone of mobilizable heavy oil in the formation in proximity to the fracture system between the wells;

wherein the fractures between the production wells and the injection well are formed by horizontal hydraulic fracturing, wherein the heavy oil reservoir is less than about 1500 meters in depth, and wherein subsequent to step (e), heavy oil is recovered as the heated permeable zone of mobilizable heavy oil between the wells is enlarged by effecting channel flow conduction heating steam flooding.

4,265,311

METHODS OF WATER FLOODING AND FRACTURING USING CLEAN, NON-DAMAGING FRACTURING FLUIDS

John W. Ely, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Division of Ser. No. 18,537, Mar. 8, 1979, abandoned. This application Nov. 5, 1979, Ser. No. 91,685
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—271 **17 Claims**

2. A method of fracture treating a subterranean hydrocarbon-producing formation penetrated by an injection well and a producing well, said method consisting essentially of:

forming a fracture in said formation by introducing therein, under fracturing conditions via said injection well, a viscous water base fracturing composition comprising a viscosifier, a cation and a solid, water soluble high molecular weight polymeric fluid loss compound selected from the group consisting of polyacrylamide, carboxymethyl cellulose and carboxymethyl hydroxyethyl cellulose which is insoluble in said fracturing composition liquid phase in the presence of said cation; wherein said polyacrylamide has a molecular weight in the range of about 1 to about 20 million and said carboxymethyl cellulose has a molecular weight in the range of about 50,000 to 1,000,000

introducing into said formation via said injection well and said fracture a quantity of water free of said cation whereby said fluid loss compound dissolves and hydrocarbons present in said formation are displaced toward said producing well.

4,265,312

METHOD FOR DEVELOPING WATER WELLS

Dennis J. Thein, Rochester, Minn., assignor to Thein Well Company, Incorporated, Rochester, Minn.

Filed Jan. 25, 1980, Ser. No. 115,200
Int. Cl.[3] E21B *37/00, 43/00*
U.S. Cl. 166—312 **3 Claims**

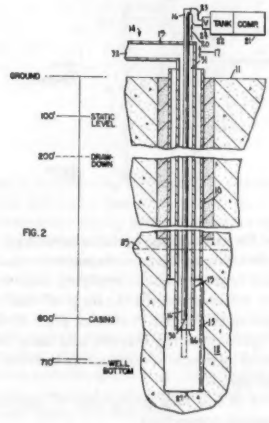


FIG. 2

1. The method of removing particulate matter from the bottom of a drilled water well having a casing open at its top, which comprises the steps of

(a) lowering a pair of tubes one within the other into said casing so that their lower ends extend below the level of the water in said well, with the outer tube extending below the inner tube to a site near the bottom of said well, to define a primary upward discharge path, between said outer tube and said inner tube, and a secondary upward discharge path, between said outer tube and said casing;

(b) supplying air to the top of said inner tube at such a pres-

sure as to cause a primary discharge of fluid upward through said primary discharge path by air-lift operation;

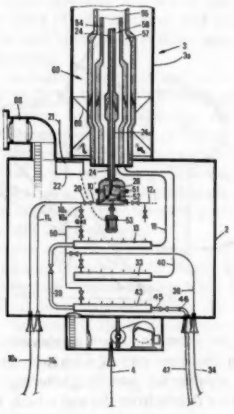
(c) and intermittently first closing said primary discharge path near the top of said outer tube—to interrupt said primary discharge and compel said air to cause a secondary discharge of water downward through said outer tube, and then upward at high velocity through said second discharge path, to entrain said particulate matter—and afterwards suddenly reopening said primary discharge path to interrupt said secondary discharge, enabling rapid gravitational return of water in said secondary discharge path and reestablishing said primary discharge.

4,265,313

MOORING STATION AND TRANSFER TERMINAL FOR OFFSHORE HYDROCARBON PRODUCTION

Marcel Arnaudeau, Paris, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Feb. 13, 1979, Ser. No. 11,817
Claims priority, application France, Feb. 14, 1978, 78 04330
Int. Cl.³ E21B *43/017*
U.S. Cl. 166—366 **13 Claims**



1. A mooring station and transfer terminal for offshore hydrocarbon production from a plurality of underwater wells connected to a plurality of production lines, each line communicating with one of said wells, said mooring station and transfer terminal comprising:

at least one underwater production manifold communicating with said production lines;

a riser comprising a through-flow line (TFL) servicing pipe and a plurality of pipes coaxial with and enclosing said TFL servicing pipe and defining annular spaces therebetween, said coaxial pipes including at least one production pipe communicating with said production manifold;

underwater switching means comprising a movable pipe communicating at one end with said TFL servicing pipe, a plurality of ports each of which communicates with a different one of said plurality of production lines, and means for selectively bringing the other end of said movable pipe into communication with any selected one of said plurality of ports; and

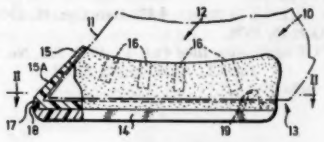
a surface facility comprising means for introducing tools into said TFL servicing pipe and communicating with the upper end thereof, and means for receiving the outflow of said at least one production pipe and communicating with the upper end thereof.

4,265,314

HORSE SHOES

Igal Tovim, Xillers Farm, Norwood End, Fyfield, Ongar, Essex, England

Continuation of Ser. No. 777,506, Mar. 14, 1977, abandoned. This application May 18, 1979, Ser. No. 40,412
Claims priority, application United Kingdom, Mar. 16, 1976, 10428/77
Int. Cl.³ A01L *3/00, 5/00*
U.S. Cl. 168—4 **12 Claims**



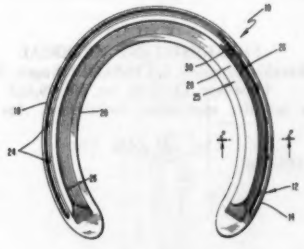
7. Apparatus for shoeing a horse, comprising a strip of flexible resilient material having an L-shaped cross section and being preformed to fit against both the wall and peripheral region of the sole of a horse's hoof around the front and sides thereof, said preformed strip being adapted for adhesive application to a horse's hoof and having sufficient flexibility to readily conform closely to the configuration of both the wall and sole portion of the hoof to thereby maximize the adhesively bonded surface contact of the strip with the wall and sole of the hoof, the flexibility and resilience of the strip permitting the deformation of the side wall thereof as necessary to conform to the curvature of the hoof without substantially affecting the configuration of the bottom wall of the strip and its conformance to the sole of the hoof, a preformed plastic horse shoe, said horse shoe being formed of an abrasion resistant plastic material of substantially greater hardness than the plastic material of said strip, said plastic horse shoe being preformed for bonding to said preformed strip after said strip has been adhesively bonded to a horse's hoof.

4,265,315

HORSESHOE WITH A CONTINUOUS WEDGE-SHAPED CALK

Jerome P. Thomas, P.O. Box 74, Middleburg, Va. 22117

Filed Jun. 4, 1979, Ser. No. 45,256
Int. Cl.³ A01L *7/04*
U.S. Cl. 168—/29 **10 Claims**



1. A horseshoe for attachment to a horse's hoof comprising:

a U-shaped foot portion forming the body of the shoe, said foot portion including a flat for lying against the horse's hoof and an inside, inclined surface opposite said flat,

a continuous calk running along substantially the entire length of said foot portion and including a wedge-shaped portion having a pointed ridge projecting beyond said foot portion opposite to and at a constant distance from said flat, said continuous calk including an inside, inclined face and an outside, inclined face on opposites sides of said ridge, said inside, inclined face and said inside, inclined

surface of said foot portion forming a continuous inclined surface extending in cross section from said ridge to the inner periphery of said foot portion, and

means for securely attaching said continuous calk to said foot portion.

4,265,316

FIRE EXTINGUISHING SYSTEM HAVING A LINKAGE OPERATED VALVE

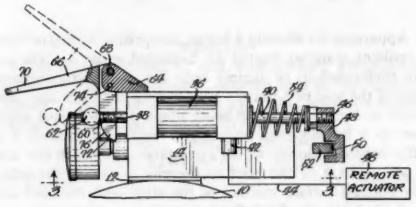
David M. Fee, Groveland, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US 79/00845, § 371 Date Oct. 15, 1979, § 102(e) Date Oct. 15, 1979.

This PCT application filed Oct. 15, 1979, Ser. No. 140,386

Int. Cl.[1] A62C *35/02, 35/12*

U.S. Cl. 169—19 **5 Claims**



1. A fire extinguishing system including a vessel (**10**) for receipt of a fire extinguishing material and having an outlet (**12**), a flow control mechanism (**14**) normally closing the outlet to maintain fire extinguishing material in the vessel until needed, a linkage (**20,30**) for actuating the flow control mechanism to open the outlet, a fluid cylinder (**36**) connected to the linkage for operating the same in response to a remotely generated fluid pressure signal, a manual actuator (**66**) connected to the linkage for operating the same in response to manual activation by manual, mechanical movement and characterized by the cylinder (**36**) being a double rod ended (**38,40**) cylinder having one rod (**40**) end connected to the linkage, the cylinder having an inlet (**42**) for recipt of pressure fluid to drive said one rod end in one direction to operate the linkage, and further characterized by the manual actuator being a movable handle (**70,72**) coupled to the other rod end (**38**) of said cylinder and manually operable to drive said one rod end in said one direction to operate the linkage.

4,265,317

FIRE RESISTANT MATERIAL

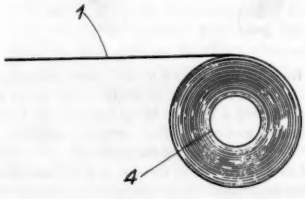
Werner Knecht, Usserdorf 6, CH-5312Döttingen, Switzerland

Filed Apr. 12, 1979, Ser. No. 29,413

Claims priority, application Switzerland, Apr. 25, 1978, 4427/78

Int. Cl.[1] A62C *7/00*

U.S. Cl. 169—50 **4 Claims**



1. A device for extinguishing fires comprising a thin, pliable, air-impervious sheet having a thickness in the range of substantially 0.2 to 0.6 mm and a melting point in the range of substantially 105° C. to 135° C., said sheet being fabricated of a synthetic plastic material containing a flame-smothering and flame-inhibiting additive which is homogeneously distributed within and throughout the said plastic material, said sheet being adapted to be laid upon a burning object and, by reason of the pliability, weight, and melting point of the said thin sheet, being adapted to be partially melted by the heat radiated by said object and to plastically conform to irregularities in the burning object thereby to form an air-excluding fire extinguishing layer which completely covers and seals the burning object, wherein said sheet consists of two superposed layers of said plastic material and additive, said two layers being separated from one another by an intervening thin layer of air acting as an insulator.

4,265,318

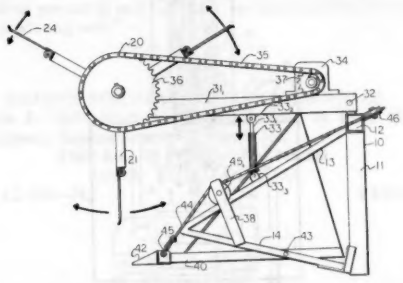
CHUNK PICKING MACHINE

Martin Gaspard, Batchelor, La. 70715

Filed Jul. 27, 1979, Ser. No. 61,489

Int. Cl.[3] A01B *43/00*

U.S. Cl. 171—63 **10 Claims**



1. Apparatus for mounting upon an elevator, or lift mechanism located on the front end of a tractor, combine or other powered land vehicle for use in gathering stumps, twigs, branches and other debris from the soil which, in combination, comprises

a rigid frame constituted of vertical posts, horizontal posts, and fixed support struts, said frame being attached directly to the front end of said vehicle and capable of being vertically lifted by said vehicle lift mechanism,

a rotary rake mechanism capable of continuous full rotation mounted upon said frame, said rotary mechanism including a rotary rake mounted upon an arm which is pivotally attached via an end to said rigid frame, a motor mounted on said arm operatively associated with said rotary rake for supplying power for rotation of same for sweeping the surface of the soil when the rotary rake is lowered into contact therewith, and means mounted on said frame for raising and lowering said rake relative to the soil for sweeping same,

an open front pan pivotally mounted on said rigid frame independent of, and below the rotary rake of said rotary rake mechanism for moving along the surface of soil for collecting the debris swept therein from the surface of the soil via rotation of said rotary rake when said rake is lowered into contact with the soil, and

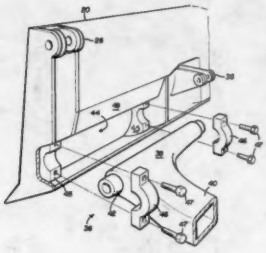
a means for pivoting the open front end of said pan downwardly for dumping said collected debris from the pan when raised by the lift mechanism located on the front end of said powered land vehicle.

4,265,319

PUSHBEAM TO BLADE HINGE CONNECTION

David H. Seaberg, Davenport, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Dec. 7, 1978, Ser. No. 967,465
Int. Cl.³ E02F *3/76*
U.S. Cl. 172—811 **1 Claim**



1. In an earth-working machine having a frame and a transverse blade body at the forward end thereof, a pair of spaced apart pushbeams each pivotally secured at one end to said frame on opposed sides of said machine, and said pushbeams pivotally secured to said blade body at their opposed ends, the improvement comprising:

said blade body including a rear wall spaced from a forward wall, and said blade body being pivotally secured to said pushbeams by hinge connection bodies, each said hinge body being of generally L-shaped one-piece construction and having a hinge pin leg disposed parallel to the backside of said blade and a second leg telescopically received in the forward end of a respective pushbeam, and housings formed within said blade body forwardly of said rear wall for mounting said hinge pin legs;

means for pivotally securing each hinge pin leg within a respective housing formed in the blade body thereby permitting pivotal movement by said blade about a transverse, horizontal, pivot axis, each hinge pin leg including pivot bearing surfaces on the opposite ends of said hinge pin leg, and said securing means including bearing blocks mounted to opposed interior side walls of each said housing for mounting a hinge pin leg within a respective blade housing;

each housing including an inclined relief surface along one of its exterior edges which permits said blade to pivot about the longitudinal axes of said hinge pin legs without binding; and

said horizontal, transverse pivot axis between said blade and said hinge pin legs being disposed within the housings of said blade body and forward of said rear wall thereby limiting the torsional load on said blade.

4,265,320

ELECTRICALLY POWERED TORQUE-CONTROLLED TOOL

Tamotsu Tanaka; Michio Kato, both of Hirakata; Masataka Uematsu, Katano; Yoshikazu Nishida, Hirakata, and Shuji Hosokawa, Habikino, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 4, 1978, Ser. No. 902,867
Claims priority, application Japan, May 16, 1977, 52/56960; Nov. 1, 1977, 52/131723
Int. Cl.³ B23Q *5/027*
U.S. Cl. 173—12 **7 Claims**

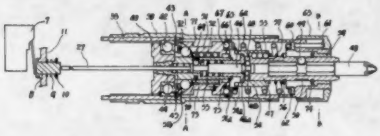
1. A powered torque-controlled tool comprising:

a motor which is a drive source;

a control means for starting and stopping said motor;

a clutch installed between said motor and a bit holder so as to permit interruption and continuation of the transmission of rotation between the both, said clutch having a driving and a driven element;

a torque cut-off mechanism adapted to act on said clutch when the torque on the bit holder reaches a preset torque value to thereby cut off the driving force from the motor to the bit holder, said torque cut-off mechanism comprising a drive shaft receiving the driving force of said motor and having cam surfaces, a driving member having said driving element of said clutch at one end portion thereof and axially tapered grooves at portions of its inner periphery facing said cam surfaces of said drive shaft, said driving member being rotatable and axially slidable relative to said drive shaft, balls disposed between said cam surfaces



of said drive shaft and said grooves of said driving member and continuously drivingly coupling said driving member to said drive shaft, said balls being movable radially in response to the force received from said cam surfaces of said drive shaft by rotation thereof and forcing axial movement of said driving member, and resilient means axially biasing said balls and said driving member into contact;

a lock mechanism for holding said clutch driven element in its disengaged state at the cut-off time; and

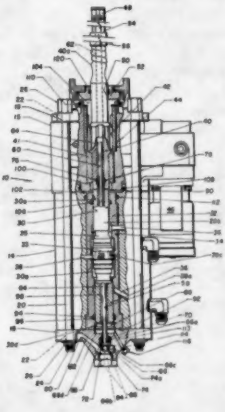
an operating means adapted to transmit the action of said torque cut-off mechanism to said control means, said clutch constituting the sole means for interrupting the transmission of rotation from said motor to said bit holder.

4,265,321

ROCK DRILL

George A. Hibbard, Claremont, N.H., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Nov. 12, 1975, Ser. No. 631,054
Int. Cl.³ E21B *1/02*
U.S. Cl. 173—78 **10 Claims**



1. A fluid motor comprising: a body member; an elongated chamber defined within said body member and having a first portion intermediate second and third portions thereof; a working member reciprocable within said first portion; means for introducing a flow of pressurized liquid within said second

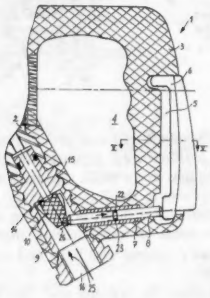
and third portions; sealing means for sealing said first portion from said flow of pressurized liquid within said second and third portions; and means for maintaining a gaseous pressure within at least a part of said first portion and communicating with said sealing means at a pressure greater than the pressure of such liquid.

4,265,322

COMPRESSED AIR FEED CONTROL SYSTEM FOR A TAPPING DEVICE

Henri Emonet, Montbrison, France, assignor to Maco-Meudon, Saint Priest, France

Filed Sep. 19, 1978, Ser. No. 943,912
Int. Cl.[3] B23B *45/04*
U.S. Cl. 173—169 **7 Claims**



1. A compressed air distributor system utilizing a source of compressed air for powering hand operated air equipment, said distribution system comprising:

a handle housing having a first passage and a recessed portion;

an annular member mounted coaxially in said first passage, said annular member having a second passage therethrough and means for sealing said first passage;

pivot valve means sealingly mounted in said second passage for selectively opening and closing said second passage;

said pivot valve means further comprising a valve body having a trunconical outer configuration with a central counterbore, said valve body further having a base diameter at one end and a reduced diameter at the opposite end with a circular lip extending axially in one direction from said base diameter and located concentric to said central counterbore, said circular lip defining a valve seat, said trunconical outer configuration further having axial grooves radially spaced and beginning at said base diameter and extending in an opposite direction toward said reduced diameter, said valve body further being mounted in said second passage of the annular member for selectively opening and closing said second passage;

control means mounted in said recessed portion, said control means being mounted in said recessed portion to move from a predetermined first position to a predetermined second position;

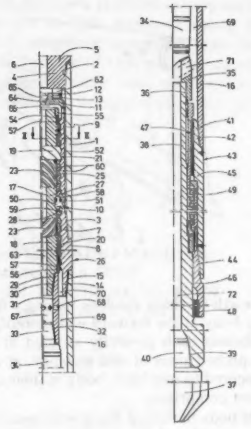
means for translocating interposed said pivot valve means and said control means, said translocating means further being mounted in intimate contact with said control means and said pivot valve means such that when said control means is at said predetermined first position, said translocation means communicates with said pivot valve means to seal said first passage, and when said control means is at said predetermined second position, said translocation means communicates with said pilot valve means to open said first passage means permitting said source of compressed air to pass to the distributor.

4,265,323

DIRECT BIT DRIVE FOR DEEP DRILLING TOOLS

Rainer Juergens, Altencelle, Fed. Rep. of Germany, assignor to Christensen, Inc., Salt Lake City, Utah

Filed Sep. 13, 1979, Ser. No. 75,352
Int. Cl.[3] E21B *4/02*
U.S. Cl. 175—107 **20 Claims**



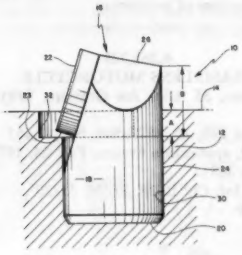
1. In a direct bit drive for deep drilling tools of the kind comprising a housing having an inlet end and an outlet end, a rotor disposed in said housing for rotation therein and for limited radial enlargement but not for axial displacement, said rotor and said housing interengaging at surfaces shaped in the manner of helical teeth, said shaped surfaces jointly defining at least one helical working space for a liquid or gaseous working medium, one of said shaped surfaces being formed on a shaped member of resiliently deformable material, and bearing in regions which move axially, upon relative rotary movement between said housing and said rotor, under pressure, with a sealing action, against the other shaped surface, which is of rigid construction, said shaped member of resiliently deformable material being arranged to be acted upon by the pressure of a pressure medium in a pressure chamber with radially directed deformation forces which alter, depending on the pressure prevailing in the working medium at the inlet side of said housing, and wherein said rotor comprises a shaft which acts as a carrier for the shaped member of resiliently deformable material, said shaped member of resiliently deformable material being disposed on the shaft and being constructed in the form of a diaphragm member which is located at its two ends on the shaft and is freely displaceable radially in its intermediate region, relative to the shaft and which, at its inside, during its radial displacement movements, is in positive guiding engagement with formations of the shaft and can be acted upon by the pressure of a pressure medium in a pressure chamber formed between the shaped member of resiliently deformable material and the shaft with said radially directed deformation forces, the improvement that the drive is divided into two sections disposed end-to-end and co-axially in line each with a helical working space defined as aforesaid between surfaces shaped in the manner of helical teeth, the said helical working spaces following oppositely turning helical paths and being arranged for the flow therethrough of the working medium, in axially opposite directions, wherein the two drive sections are provided with a central continuous bore for the return flow of working medium conveyed through the helical working space of the upper drive section to the bit.

4,265,324

ECCENTRIC COUNTERBORE FOR DIAMOND INSERT STUD

John F. Morris, Westminster, and Robert V. Worrell, Irvine, both of Calif., assignors to Smith International, Inc., Newport Beach, Calif.

Filed Nov. 29, 1979, Ser. No. 98,462
Int. Cl.³ E21B *10/46*
U.S. Cl. 175—329 **5 Claims**



1. A diamond drag bit apparatus wherein said drag bit has a multiplicity of individual diamond inserts strategically inserted within insert holes formed in a face of said drag bit, said diamond inserts having a diamond cutting disc at a first cutting end and a shank portion at an opposite end, said drag bit comprising:

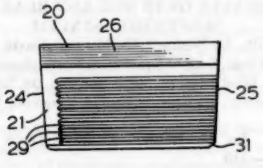
means to provide additional support for said cutting end of said insert along a longitudinal surface of said insert shank substantially opposite to said diamond cutting disc attached to said shank at said first cutting end by relieving a portion of said drag bit face near said insert hole formed in said face to clear an edge of said disc nearest said face of said drag bit so that said shank may be inserted deeper into said insert hole, said relieved portion is provided by eccentrically counterbore drilling each of said insert holes, said counterbore being so positioned to provide relief clearance for an edge of said cutting disc nearest said face of said drag bit while leaving said insert shank with backup material substantially opposite to said cutting disc of said insert, said relieved portion of said insert hole being so positioned dependent upon said strategic orientation of said cutting disc of said insert relative to said face of said drag bit.

4,265,325

PERCUSSION ROCK BIT

David C. Dick, Islington, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Continuation of Ser. No. 905,863, May 15, 1978, abandoned. This application Oct. 1, 1979, Ser. No. 80,664
Claims priority, application Canada, Jun. 10, 1977, 280272
Int. Cl.³ E21B *10/52, 10/62*
U.S. Cl. 175—410 **15 Claims**



1. A cutting tool comprising in combination a steel body having a head portion including a face wall and a side wall intersecting said face wall, an elongated slot in said head communicating with said face wall and said side wall;

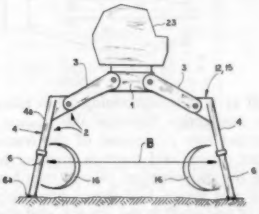
a cemented carbide cutting insert positioned in said slot and having a base and opposed flank walls upstanding therefrom, said base and said flank walls together in right cross section being of complementary form to the right cross section of said slot, each said flank wall being provided with a plurality of elongated serrulations extending substantially parallel to the base of said insert, the width of said insert as measured between the crests of opposed serrulations being greater than the width of said slot prior to the insertion of said insert therein to provide an interference fit therewith, and the width of said insert, as measured between the troughs of opposed serrulations, is marginally less than the width of said slot, to provide relief clearance at said troughs.

4,265,326

ROLLING AND STEPPING VEHICLE

Ernst Lauber, Thun, Switzerland, assignor to Willy Habegger, Hünibach near Thun, Switzerland

Filed Feb. 23, 1979, Ser. No. 14,593
Int. Cl.³ B62D *57/02*
U.S. Cl. 180—8 R **13 Claims**



1. A rolling and stepping vehicle comprising:

a central support adapted to serve as a tool platform;

a plurality of traveling legs extending outwardly from said support;

means pivotally connecting each of said legs to said support for swinging movement about a respective upright axis, each of said traveling legs including an outrigger pivotally connected to said support at the respective axis and swingable in a vertical plane, and a support shank articulated to said outrigger and swingable in a respective vertical plane relative thereto;

means on each of said legs for enabling the pivotal movement of the respective shank relative to the respective outrigger about a substantially vertical steering axis;

rolling means on each of said shanks for rolling engagement with the ground; and

a respective support ram telescopingly received in each of said shanks and extensible to support the platform on the ground independently of the respective rolling means.

4,265,327

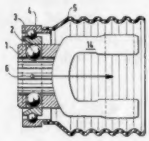
RELEASE DEVICE

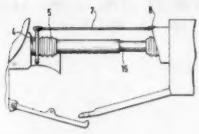
Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,593
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743072
Int. Cl.³ B60K *25/00*
U.S. Cl. 180—53 D **8 Claims**

1. A device for releasing a locked connection between a power take-off member and one of a tractor and an agricultural implement comprising an axially elongated telescoping power take-off shaft having a first end and a second end and being telescopable at a point intermediate the ends thereof, said first

end arranged to be secured to one of the tractor and the agricultural implement, and means for releasably attaching said second end to the other one of the tractor and the agricultural implement, said means including a member displaceable in the axial direction of said shaft for releasing the attachment of said shaft, wherein the improvement comprises an elongated traction member extending in the axial direction of said shaft and having a first end and a second end with the first end secured to said displaceable member and the second end arranged to be fixed to one of the tractor and the agricultural implement to which the first end of said shaft is arranged to be secured and said shaft between the first end of said shaft and the point on





said shaft at which telescoping takes place so that after the drawbar connection between the tractor and implement is disconnected any movement of the tractor away from the implement causes said traction member to be tensioned for effecting the displacement of said member and effecting the release of said means, said means releasably attaches said second end of said shaft to the tractor, said shaft comprises a pair of axially extending parts one telescoping into the other, a tubular protective member for each said part of said shaft, said tubular protective member being telescopable one into the other, and the second end of said traction member is fixed to the one of said protective members closer to the implement.

4,265,328

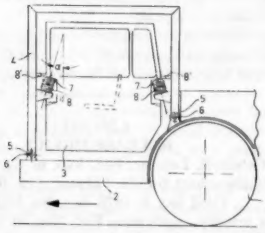
DEVICE FOR RESILIENTLY SUPPORTING A DRIVER'S COMPARTMENT, PARTICULARLY IN HEAVY-DUTY TRUCKS

Jan-Erik Rowa, Mangigatan 14, 981 00 Kiruna, and Anders Sundgren, Tunastigen 82, 951 58 Luleå, both of Sweden

Filed Apr. 18, 1979, Ser. No. 31,240

Int. Cl.[3] **B62D** *27/04*

U.S. Cl. 180—89.13 **4 Claims**



1. In a device for resiliently supporting a driver's compartment which is subjected to vibrations in a heavy-duty vehicle having a nonresilient wheel suspension, said compartment housing at least one seat and being connected to a supporting portion of the vehicle by means of a plurality of spring means, the improvement wherein said spring means comprise four helically coiled springs which are spaced from one another symmetrically around the compartment, each of said helically coiled springs being connected to the compartment at a common and substantially horizontal plane which is located intermediate the top and bottom of said compartment at a position closely adjacent the center of gravity of said compartment, the axis of action of each of said helically coiled springs being at an acute angle of about 20° to the vertical so as to allow the accommodation of vibratory motions in all directions in a three-axis right-angle coordinate system, thereby to obtain all six degrees of freedom of movement.

4,265,329

FRAMELESS MOTORCYCLE

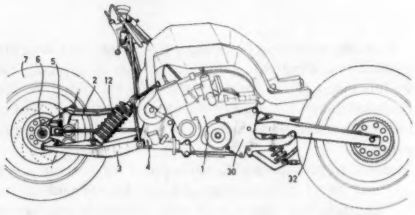
André de Cortanze, 35 Allee des Graviers, 91010 Chevry 2, France

Filed Feb. 15, 1979, Ser. No. 12,457

Claims priority, application France, Feb. 24, 1978, 78 05284; Dec. 29, 1978, 78 36813

Int. Cl.[3] **B62K** *25/16, 25/20*

U.S. Cl. 180—219 **9 Claims**



1. A frameless two-wheeled motor vehicle comprising a motor assembly including a motor, a front assembly including a steerable front wheel having a horizontal axis, movable front linking means for linking said front assembly to said motor assembly, a rear assembly including a rear wheel, movable rear linking means for linking said rear assembly to said motor assembly, and a steering assembly linked to said front assembly and connected to said motor assembly, said front linking means comprising an upper front linking arm and a lower front linking arm substantially parallel to said upper front linking arm, each one of said front linking arms having a front end and a rear end, the rear ends of said front linking arms being pivotally mounted to said motor assembly about respective substantially horizontal parallel axes, the front end of each front linking arm being movably mounted by means of a ball-and-socket joint on a front supporting plate on which is also mounted, in a cantilever position, an axle for rotationally supporting said front wheel, a front damping spring having an upper end pivotally mounted to said motor assembly and a lower end pivotally mounted on said lower front linking arm, said steering assembly being linked to said front supporting plate, and a front wheel braking device mounted on said front supporting plate.

4,265,330

MOTORCYCLE GEAR BOX AND REAR WHEEL SUSPENSION SYSTEM

George R. Silk, 61 Netherfield Rd., and David Midgelow, 12 Hadstock Close, both of Sandiacre, Nottinghamshire, England

Filed May 14, 1979, Ser. No. 38,706

Claims priority, application United Kingdom, May 19, 1978, 20636/78

Int. Cl.[3] **B60K** *5/12;* **B62K** *11/08*

U.S. Cl. 180—230 **7 Claims**

1. A motorcycle comprising:

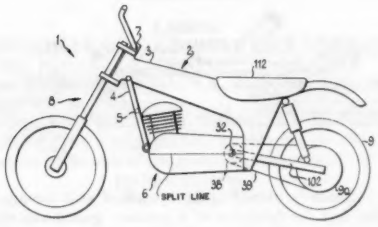
a frame structure;

an engine;

a front wheel and a rear driven road wheel, each operatively supported by said frame structure;

a change speed gear box for transmitting power from said engine to said driven road wheel at a predetermined number of gear ratios, said change speed gear box having an input shaft operatively driven by said engine, an intermediate shaft, and an output shaft, said input shaft having a plurality of gears thereon, said intermediate shaft having a plurality of gears thereon and said output shaft having a plurality of gears thereon;

means for selectively engaging and disengaging gears on adjacent ones of said input shaft, said intermediate shaft



and said output shaft to transmit power from said input shaft to said output shaft through the intermediate shaft at any of the predetermined number of gear ratios, said means including a first engaging and disengaging means between said input shaft and said intermediate shaft and a second engaging and disengaging means between said intermediate shaft and said output shaft;

a swing arm on which said driven road wheel is mounted, said swing arm having a pivot axis coincident with an axis of rotation of said output shaft; and

drive means coupling said output shaft to said driven road wheel.

4,265,331

FLUIDIC REPEATER

Willie B. Leonard, 5902 Royalton, Houston, Tex. 77036

Division of Ser. No. 622,760, Oct. 15, 1975, Pat. No. 4,094,229, which is a continuation-in-part of Ser. No. 521,036, Nov. 5, 1974, Pat. No. 4,046,059, which is a continuation-in-part of Ser. No. 489,829, Jul. 18, 1974, Pat. No. 3,988,966. This application Jan. 27, 1978, Ser. No. 872,826

Int. Cl.[3] **F15B** *13/16, 21/02*

U.S. Cl. 181—119 **4 Claims**

1. Fluidic repeater for generating seismic waves comprising

transmitter means including an actuator movable between a first position and a second position and through a continuous range of positions therebetween and adapted for connection to a source of pressure fluid and having an output adapted to deliver pressure fluid at variable pressure according to the setting of the transmitter actuator at different positions in said continuous range of positions,

oscillator means connected to said actuator for moving the actuator back and forth through said range of positions to vary the pressure of said output,

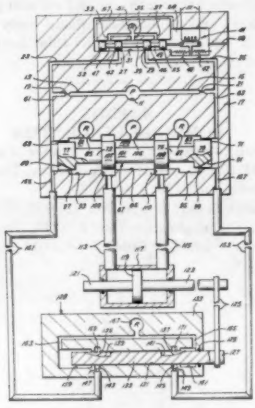
responder means comprising piston-and-cylinder means movable in response to variation of fluid pressure applied thereto and connected to the output of the transmitter for relative axial movement of the piston and cylinder in response to variation in the pressure of the transmitter output, and

feedback means actuated by said responder means for varying fluid pressure applied to the responder means to negate the effect of fluid pressure change created by change of position of the transmitter actuator,

said piston-and-cylinder means of the responder means including primary piston-and-cylinder means and load piston-and-cylinder means, and fluid passage means for supplying fluid to said load piston-and-cylinder means,

said primary piston-and-cylinder means being connected to said transmitter output and controlling fluid supply to said load piston-and cylinder means through said fluid passage means,

said load piston-and-cylinder means including a load piston and a load cylinder in which the piston moves, a piston rod connected to said piston, a ground engageable plate connected to said piston rod,



said oscillator means connected to said transmitter actuator effecting cyclic variation of pressure differential in said load cylinder on opposite sides of said load piston independent of changes of pressure of said source of pressure to cause desired vibratory movement of said plate to generate seismic waves in the ground,

said primary piston and cylinder means being continuously connected to said transmitter output,

said fluid passage means for supplying fluid to said load piston and cylinder means bypassing said transmitter means.

4,265,332

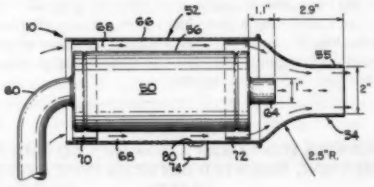
HEAT EXTRACTING MUFFLER SYSTEM

Lance O. Presnall, Reseda, Calif., and Gary H. Thurner, Saukville, Wis., assignors to FMC Corporation, San Jose, Calif.

Filed Jun. 21, 1979, Ser. No. 50,730

Int. Cl.[3] **F01N** *1/14, 5/00*

U.S. Cl. 181—211 **5 Claims**



1. A heat extracting muffler system for a vehicle having an engine and a muffler disposed within an engine housing comprising: means connecting the muffler to the engine for communicating hot exhaust gases from the engine to and through the muffler; means defining an exhaust pipe included in said muffler for discharging said gases therefrom; and means defining an open ended tubular heat shield surrounding said muffler and said exhaust pipe, said tubular heat shield means including

a body portion and means defining a venturi tube connected to said body portion and projecting out of said housing; said muffler, said tubular heat shield body and said venturi tube being of cylindrical external cross-section and being generated about a common horizontal axis extending transversely of the engine housing; said venturi tube means being of generally frusto-conical configuration and receiving the end portion of said exhaust pipe for accelerating said exhaust gases which create an airflow through an annular passage between said muffler and said heat shield for drawing warm air from said engine housing and for cooling the peripheral surfaces of said muffler before discharging the air and exhaust gases externally of said housing, said tubular heat shield body having a large diameter inlet end and said venturi tube having its smallest diameter at its outlet end.

4,265,333

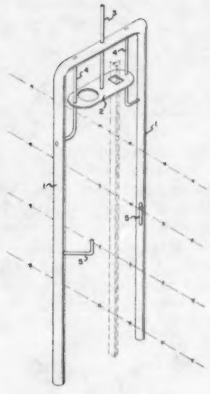
PORTABLE FENCE STILE

Robert Rowell, Whispering Pines Trailer Park, Box 1008, Derry, N.H. 03038, and Albert A. Hickey, 216 Dauphine Dr., West Monroe, La. 71291

Continuation-in-part of Ser. No. 925,935, Oct. 25, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,885

Int. Cl.³ E06C *7/48, 1/04*

U.S. Cl. 182—92 **9 Claims**



1. A fence stile comprising two spaced-apart generally vertical when-in-use support members adapted to be placed on either side of a fence and having a length sufficient to extend above said fence, a connecting member at the upper portions of said vertical support members and holding said upper portions of said spaced-apart relationship, at least one foot support means on each of said support members a stepping height from the lower ends thereof, and a stabilizer plate generally horizontal in use comprising a plate having an opening adapted to fit over the top of a fence post and slideably attached to said stile between said support members at said upper portions and beneath said connecting member.

4,265,334

APPARATUS FOR LUBRICATION OF A DIFFERENTIAL BEARING MOUNTED BETWEEN CONCENTRIC SHAFTS

George J. Benhase, Jr., West Chester, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 4, 1978, Ser. No. 965,953

Int. Cl.³ F02C *7/06;* **F16D** *3/46*

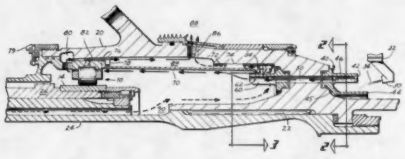
U.S. Cl. 184—6.11 **4 Claims**

2. In an apparatus having a cylindrical rotating shaft with a hollow interior partially defined by an inner wall surface, a lubrication-receiving device positioned radially inwardly in respect to the inner wall surface of said shaft, and having means for introducing lubricant into the interior of said shaft at a point remote from said lubrication-receiving device, improvements comprising:

a transfer tube engaging the inner wall surface of said shaft for rotation therewith, a hollow region of said transfer tube extending from said means for introducing lubricant into said shaft to said lubrication-receiving device for supplying lubricant directly to said device; and

said means for introducing lubricant into the interior of said shaft being comprised of:

(a) at least one passage extending from an exterior portion to the hollow interior of said shaft;



(b) a dispenser extending from each of said passages for directing the lubricant to a position spaced radially inwardly from the inner wall surface of said shaft, wherein each of said dispensers comprises:

(i) an axial wall, extending from each of said passages, for receiving lubricant;

(ii) said wall having side portions for confining the flow of lubricant within a region defined by said wall and permitting a radial flow of a second fluid around the side portions of said walls; and

(iii) an end portion of said wall being positioned within the hollow region of said transfer tube for depositing lubricant therein.

4,265,335

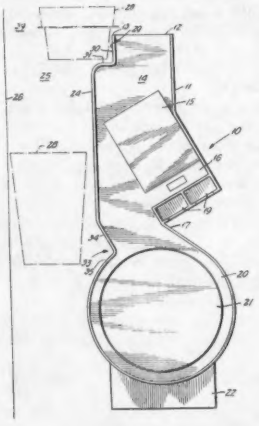
CHECK-OUT COUNTER

Stanley S. Joseloff, 217 Webb Rd., Fairfield, Conn. 06430

Filed Oct. 19, 1979, Ser. No. 86,270

Int. Cl.³ A47F *9/04*

U.S. Cl. 186—63 **2 Claims**



1. In a checkout counter for supermarkets and the like having a peripheral longitudinal axis with a receiving station at a forward end thereof equipped with a conveyor means for the receipt and transport of items deposited thereon by a customer on a customer's side of the counter, a storage station positioned

on a second end of said counter and a cashier's station receiving items to be tallied from said conveyor, there being an aisle of effective width to accommodate a shopping cart for passage along side said counter from said forward end to a rearward end thereof, the improvement comprising: a recess in said counter extending from said forward end of width less than that of said aisle, and adapted to accommodate a substantial portion of the width of a shipping cart therein at the customer's side of said counter, whereby when a cart is so positioned a customer may move easily around and reach into it within said aisle; and a second recess in said counter on the customer's side thereof facing said aisle and positioned adjacent said cashier's station for permitting customer mobility within said aisle and around a cart in the close proximity of said cashier's station.

4,265,336

CONVERTIBLE SINGLE-DOUBLE BELT CHECK-OUT COUNTER

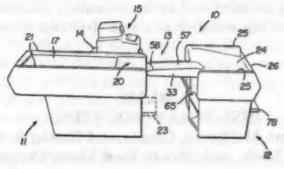
Stephen W. Foster, North Java, N.Y., assignor to Almor Corporation, Warren, Mich.

Continuation of Ser. No. 863,796, Dec. 23, 1977, Pat. No. 4,182,433. This application Aug. 6, 1979, Ser. No. 64,214

The portion of the term of this patent subsequent to Jan. 8, 1997, has been disclaimed.

Int. Cl.[3] **A47F** *9/04*

U.S. Cl. 186—66 **6 Claims**



1. A check-out counter comprising:

a forward check-out module, having a merchandize supporting surface and a rear transverse edge portion, a separate rear bagging module having a merchandize receiving deck and a forward transverse edge portion, said forward check-out module and said rear bagging module being spaced apart;

a conveyor belt unit for bridging the space between the modules and interconnecting the rear transverse edge portion of the check-out module with the forward transverse edge portion of the bagging module;

said conveyor belt unit being formed of a pair of spaced apart horizontally axised rollers secured within a rigid frame, and an endless conveyor belt passing around the rollers;

power means for rotating one of the rollers for thereby driving the conveyor belt;

means for pivotally securing one end of the conveyor belt unit to the forward transverse edge portion of said rear bagging module and releasable latch means for releasably securing the opposite end of said unit to said rear transverse edge portion of said check-out module, said rear bagging module including a conveyor belt unit receiving area consisting of opposed parallel vertical walls that form a vertical belt receiving slot wherein said unit may be stowed in said rear bagging module whereby the conveyor belt unit may be hung downwardly from said pivot means for stowing in a non-use position and may alternatively be extended and secured between the modules in a use position for conveying merchandize from the check-out module to the bagging module;

said pivotal securing means including axially aligned, oppositely extending mounting spindles for rotatably supporting the roller which is adjacent the bagging module and mounting brackets for pivotally connecting said spindles to the forward transverse edge portion of said rear bagging module between said opposed parallel walls of said bagging module belt receiving slot; and

said power means including a drive motor mounted within the roller which is adjacent the bagging module for rotating said roller upon the mounting spindles, said rigid frame also being supported upon said mounting spindles and mounting brackets and said pivotal securing means providing both pivotal securement of the conveyor unit to the rear bagging module and support for said drive motor.

4,265,337

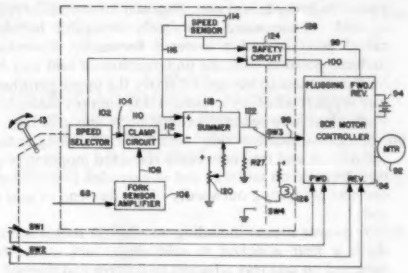
FORK LIFT TRUCK SPEED CONTROL DEPENDENT UPON FORK ELEVATION

Ned E. Dammeyer, New Bremen, Ohio, assignor to Crown Controls Corporation, New Bremen, Ohio

Filed Jul. 16, 1979, Ser. No. 57,771

Int. Cl.[3] **B66F** *9/06;* **B60K** *31/00;* **G05B** *1/06;* **H02P** *5/06*

U.S. Cl. 187—9 E **10 Claims**



1. A speed control circuit for a lift truck which includes an operator adjustable speed control mechanism, lift forks mounted on an extendable lift fork mast continuously extendable between a lower and elevated positions, an electric truck drive motor, an electric motor power source, and a motor controller for controlling the application of power to said drive motor from said power source in response to a power control signal, comprising:

speed selector means generating a speed selection signal in response to adjustment of said operator adjustable speed control mechanism,

fork height sensor means providing a continuously variable fork height signal in dependence upon the relative elevated position to which said lift forks are raised,

clamp circuit means, responsive to said speed selector means and to said fork height signal, for providing a speed control signal corresponding to said speed selection signal but having a maximum signal level determined by said fork height signal,

speed sensor means providing a speed sensor signal related to the speed of said lift truck and

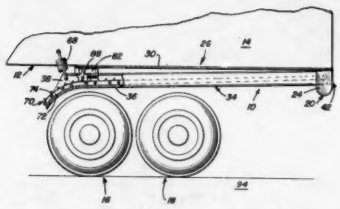
summer means, responsive to said clamp circuit means and to said speed sensor means, for comparing said speed control signal and said speed sensor signal to provide said power control signal to said motor controller in dependence upon the difference between said speed control signal and said speed sensor signal.

4,265,338

WHEEL AND GROUND ENGAGING EMERGENCY BRAKE

Andrew S. Shea, and Frances Shea, both of 171 N. Diamond St., Mount Pleasant, Pa. 15666

Filed Jan. 23, 1979, Ser. No. 5,902
Int. Cl.[3] B60T *1/04, 1/14*
U.S. Cl. 188—4 R **6 Claims**



1. In combination with a vehicle having a body and a ground engaging support wheel:

an emergency brake comprising an elongated support tray;

means pivotally mounting said support tray at one end of said vehicle body for movement about a horizontal axis disposed above and rearwardly of said support wheel and extending transversely of said tray and vehicle. the free end of said tray being open, disposed forwardmost relative to said vehicle wheel and freely swingable between a raised position and a lowered forwardly downwardly inclined position with the undersurface of said tray being held proximate to but spaced above the upper periphery of said support wheel by a resilient tray support means which is attached between said vehicle body and said tray;

an elongated flexible skid member freely longitudinally slidable on said tray between a retracted inoperative position disposed on said tray and an extended position having one end projecting outwardly of the free end of said tray; and

motive power means including an electric motor having a shaft, a gear attached to said shaft, said motor being mounted on said tray adjacent to the free end thereof, said gear operatively engaging said elongated flexible skid member for maintaining said skid member in its inoperative retracted position and for causing powered movement of said skid member for forcing said skid member to assume its extended operative position upon actuation of said motive power means.

4,265,339

DISC BRAKE

Kanji Ishihara, Kawasaki, Japan, assignor to Tokico Ltd., Japan

Filed Jun. 20, 1979, Ser. No. 50,222
Claims priority, application Japan, Jun. 20, 1978, 53-84195[U]
Int. Cl.[3] F16D *55/228*
U.S. Cl. 188—72.5 **1 Claim**

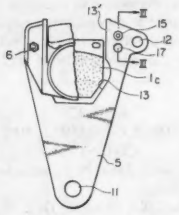
1. A disc brake comprising

a substantially flat and substantially triangular mounting member having a first through bore in the apex portion of said mounting member for connecting said mounting member to a wheel shaft of a two-wheeled vehicle, said mounting member being spaced from a rotatable disc in the direction of its rotational axis, and said mounting member extending along a plane perpendicular to the rotational axis of said disc;

a first caliper member secured to one side surface of said mounting member and incorporating therein a cylinder-piston means for applying a first friction pad against one surface of the disc,

a second caliper member secured to the opposite surface of said mounting member and incorporating therein a cylinder-piston means for applying a second friction pad against the opposite surface of said disc, said second caliper member straddling the periphery of said disc in a direction parallel to the rotational axis of said disc.

an aperture in said mounting member for receiving said piston pad therein and for absorbing the braking torque generated by said first friction pad;



a second through bore in the base portion of said mounting member for providing fluid communication between said cylinder-piston means and said first and second caliper members and

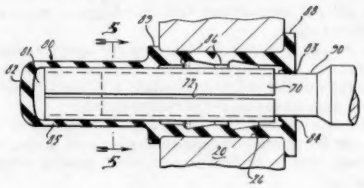
a resilient bushing disposed within said second bore and having an axial length greater than the thickness of said mounting member and being in sealing relationship with said mounting member and said first and second caliper members.

4,265,340

DISK BRAKE MOUNTING

Orland B. Scott, Maidstone, Canada, and Garrett S. Van Camp, Southfield, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jun. 29, 1978, Ser. No. 920,565
Int. Cl.[3] F16D *65/02*
U.S. Cl. 188—73.3 **8 Claims**



8. A disk brake assembly comprising:

a rotor means for receiving a braking force for reducing rotation of said rotor means;

a caliper having a housing within which a hydraulic piston means is operative for generating an actuating force so that said housing and said hydraulic piston means are urged in opposing directions;

an outer friction element mounted on said housing and an inner friction element mounted on said piston means, said outer and inner friction elements acting in cooperation with said rotor means in generating a braking force;

a support means for said caliper so that said inner and outer friction elements can be positioned on opposite sides of said rotor for transmitting a reactive torque so a braking force can be applied to said rotor means; and

a mounting means for coupling said caliper to said support means, said mounting means including a pin means having an axis generally transverse to the plane of rotation of said rotor means, a relatively low friction sleeve means adjacent said pin means, and a resilient means covering the

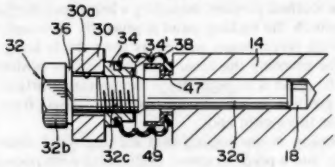
outer surface of said sleeve means so as to permit sliding movement between said pin means and said sleeve means.

4,265,341

EASY-TO-ASSEMBLE SLIDING ARRANGEMENT IN DISC BRAKE

Minoru Kuramoto, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 20, 1979, Ser. No. 50,161
Claims priority, application Japan, Jun. 26, 1978, 53-77199
Int. Cl.³ F16D *65/02*
U.S. Cl. 188—73.3 **2 Claims**



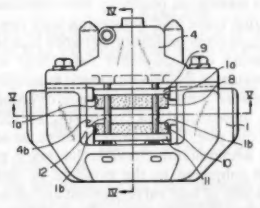
1. A sliding arrangement in a disc brake comprising:
a carrier formed with a bore;
a caliper having a pin including a slide portion slidably received in the bore;
said pin extending through a support portion of said caliper and having a portion formed with a thread on a periphery thereof and a head portion, said threaded portion being disposed between said slide portion and said head portion;
a nut engaging said threaded portion of said pin to interpose said support portion of said caliper between said head portion of said pin and said nut;
a protective boot having one end fixed to said carrier around the opening of said bore and an opposite end fixed to said nut mating with said pin to partially cover said pin;
a member fixed to said carrier, said member including a projection which has a cylindrical wall in register with the bore of said carrier and which is disposed in said protective boot and surrounded thereby; and
a cylindrical portion formed on said nut, having substantially the same diameter as the cylindrical wall of said projection of said member so as to be fittingly receivable thereby such that during assembly, said projection of said member and said portion of said nut cooperate to align said nut with said bore of said carrier to make it easy to insert said pin through said nut into said bore.

4,265,342

DISC BRAKE ASSEMBLY WITH TORQUE ABSORBING BRACKET

Yasuo Karasudani, 4309 Akuwa-cho, Seya-ku, Yokohama-shi, Kanagawa-ken, Japan

Filed Apr. 16, 1979, Ser. No. 30,651
Claims priority, application Japan, Apr. 19, 1978, 53-51576
Int. Cl.³ F16D *65/00*
U.S. Cl. 188—73.6 **2 Claims**



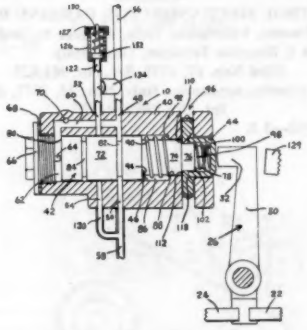
1. A disc brake assembly comprising:
a substantially L-shaped bracket capable of being secured to a non-rotatable part of a vehicle, said bracket having a portion straddling the periphery of the disc and extending in the direction of the rotational axis of said disc.
first and second spaced opposed friction pads disposed respectively on the opposite first and second surfaces of a rotatable disc,
two parallel pins each having one end thereof secured to said bracket and extending parallel to the axis of rotation of said disc,
a caliper slidably supported on said pair of pins and having a piston therein and adjacent the first side of said disc for urging said first pad against said first side of said disc,
said caliper further having a leg portion straddling a portion of the periphery of the disc in a direction parallel to the rotational axis of said disc and extending to the second surface of said disc and engaging said second pad for urging said second pad against the second surface of the disc,
an opening in the caliper extending radially outwardly of said disc for allowing therethrough the extraction of the friction pads in the radially outward direction with respect to the disc, and
a pair of retaining pins on said caliper extending across the opening in the caliper and in the direction of the rotational axis of the disc and supporting the friction pads,
said first and second spaced opposed pads having bracket engaging means on each end thereof, said bracket having guiding and supporting surfaces for engaging said pads at said engaging means for guiding said pads toward and away from said disc and for receiving the braking torque generated by the application of the pads to the brake, and
whereby the said friction pads can be dismounted from the said bracket by removing said retaining pins.

4,265,343

CONTROLLED WHEEL BRAKING SYSTEM

Fred C. Stevens, One Garrett Pl., Bronxville, N.Y. 10708

Filed Jul. 16, 1979, Ser. No. 58,001
Int. Cl.³ B60T *8/04*
U.S. Cl. 188—181 T **7 Claims**



1. A hydraulic braking system for a vehicle wheel comprising a rotatable member, brake means and a fluid brake cylinder, said fluid brake cylinder having fluid pressure sensing means for transmitting force to said brake means so as to bias said brake means against said rotatable member, supply means for supplying fluid under pressure to said fluid pressue sensing means, valve means disposed between said supply means and said fluid pressure sensing means for controlling the flow of fluid to said fluid pressure sensing means and means associated with said brake means and said valve means for sensing the frictional force between said brake means and said rotatable member, said means for sensing said frictional force comprises a pivotably mounted lever means having a first short portion in contact with said brake means and a second longer portion in contact with said valve means for transmitting force to said

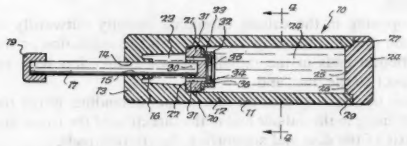
valve means in response to said sensed frictional force wherein said valve means blocks the flow of fluid to said fluid pressure sensing means at the instant of vehicle wheel lock up sensed by said frictional force sensing means.

4,265,344

LIQUID SPRING WITH INTEGRAL PLASTIC BODY AND SEAL AND FABRICATION METHOD THEREFOR

Paul H. Taylor, Grand Island, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.

Continuation of Ser. No. 862,745, Dec. 21, 1977, abandoned.
This application Sep. 19, 1979, Ser. No. 76,839
Int. Cl.³ F16F 9/32
U.S. Cl. 188—322 **16 Claims**



1. A liquid shock-absorber device comprising a plastic cylinder having first and second ends, an end wall molded integrally with said cylinder at said first end of said cylinder, a piston rod having a central portion and a first end within said cylinder and a second end externally of said cylinder, a plastic seal including a flexible annular lip molded integrally with said end wall, said flexible annular lip extending inwardly into said cylinder and in combination with said first end wall defining an opening for receiving said central portion of said piston rod in sealing relationship, a chamber proximate said end wall at said first end of said cylinder surrounding said flexible annular lip, closure means closing said second end of said cylinder, and fluid in said chamber

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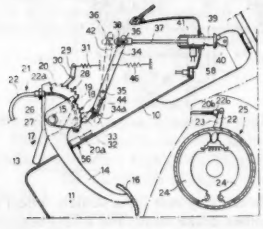
4,265,345

CONTROL MECHANISM FOR PARKING BRAKE

Osvaldo Fasano, Villarbasse, Italy, assignor to Studi Apparecchiature E Ricerche Tecniche, Turin, Italy

Filed Nov. 17, 1978, Ser. No. 961,825
Claims priority, application Italy, Nov. 22, 1977, 69635 A/77
Int. Cl.³ B60K 41/20
U.S. Cl. 192—3 R **8 Claims**



1. A control mechanism for a parking brake of a motor vehicle, comprising in combination:

flexible transmission means comprising a sheath and a control cable slidable in said sheath;

a brake member connected to one end of said cable and controlling a control lever; the operation of the parking brake; adjustable anchorage means attached to the end of the sheath adjacent the control lever for attaching said sheath end to the vehicle body, the opposite end of said sheath abutting the brake member;

adjustment means for adjusting said adjustable anchorage means to vary the position of the associated end of the sheath with respect to the vehicle body;

said control lever connected to the other end of said control cable and pivotally mounted on the vehicle body whereby the application of pressure to one end of said control lever pivots the lever and actuates the parking brake through the cable, said control lever having a peripherally toothed portion remote from the said one end;

a locking pawl urged into engagement with said toothed portion to prevent pivoting of the lever in the sense opposite to that which effects braking;

means for urging said locking pawl into engagement with the toothed portion;

a release mechanism for releasing the pawl from engagement with the toothed portion, including a lever arm carrying a pin on which the locking pawl is pivotally mounted, said arm having pivot means carried by the vehicle body, and means for pivoting the lever arm from a first position in which the pawl is engaged with the toothed portion to a second position in which the pawl is released from engagement therewith; and

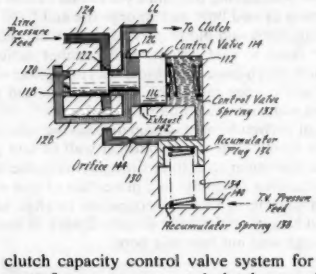
resilient biasing means urging said locking pawl about its pivot pin into a predetermined orientation with respect to the lever arm.

4,265,346

CONTROL VALVE MECHANISM FOR HYDRAULIC CLUTCH IN A POWER TRANSMISSION MECHANISM

Ramakrishna Emmadi, Troy, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 4, 1979, Ser. No. 960
Int. Cl.³ B60K 41/02
U.S. Cl. 192—0.034 **2 Claims**



1. A clutch capacity control valve system for controlling engagement of a pressure operated clutch comprising a fluid pressure feed passage for said clutch, a pressure regulator valve in said passage for modulating the pressure made available to said clutch, said valve comprising a valve chamber, a regulating valve spool having spaced valve lands, a first port and a second port communicating with said valve chamber at locations intermediate said valve element lands, a bypass passage extending from one portion of said valve chamber to one side of said valve element, spring means acting on said one side of said valve element tending to move the latter to a passage open position which establishes relatively free communication between said ports, one valve land registering with one port of establish restricted fluid communication between said ports, an exhaust port registering with the other valve land whereby said valve element regulates the pressure made available to said clutch when the pressure force acting thereon overcomes the force of said spring, an accumulator comprising an accumulator chamber on said one side of said valve element, an accumulator piston in said accumulator chamber having a pressure area thereon that is subjected to the pressure in said valve chamber on said one side of said valve element and an accumulator valve spring opposing the pressure force acting on said accumulator piston, said accumulator including means for distributing a torque sensitive pressure signal to said accumulator chamber whereby a pressure force proportional to torque is

developed on said accumulator piston to supplement the force of said accumulator spring.

4,265,347

CLUTCH MECHANISM FOR POWER DRIVEN HAND TOOLS

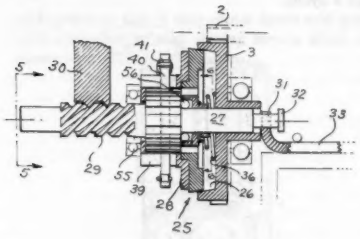
Helmut Dischler, Neuss, Fed. Rep. of Germany, assignor to Novopress GmbH Pressen und Presswerkzeuge & Co. KG, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,192

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709946

Int. Cl.³ F16D *43/20*

U.S. Cl. 192—56 R **14 Claims**



1. In a power driven tool, having a motor with a power takeoff pinion and a clutch for engaging the pinion with means for driving an output spindle, the improvement comprising:

(a) a fixed clutch half coupled to said power takeoff pinion;

(b) a movable clutch half coupled to said means for driving said output spindle;

(c) means for urging said clutch halves together in proportion to the output torque transmitted by said output spindle, comprising a shaft on which both said clutch halves are mounted and means mounted on said output spindle and engaging said shaft for moving said shaft in a direction so as to urge said clutch halves into tighter engagement; and

(d) means for disengaging said clutch halves when said output torque of said output spindle exceeds a predetermined limit, comprising a gear rim mounted on said shaft which normally engages inside gearing mounted on said movable clutch half so as to urge said movable clutch half into engagement with said fixed clutch half when said shaft is displaced in an axial direction, said movable clutch half being axially displaceable with respect to said shaft in response to said overload condition so as to move said clutch halves out of engagement in response to said condition, the teeth of said gear rim and the teeth of said inside gearing normally abutting against each other, but meshing with each other in the presence of an overload condition so as to permit the axial displacement of said movable clutch half with respect to said shaft.

4,265,348

ELECTRO-VISCOUS FAN CLUTCH WITH SNAP ACTION SPRING VALVE ELEMENT FOR CONTROL OF FLUID GATE

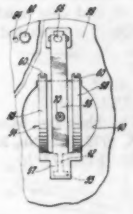
Stephen E. Clarke, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 26, 1979, Ser. No. 88,475

Int. Cl.³ F16D *35/00*

U.S. Cl. 192—58 B **2 Claims**

1. A fan for inducing air flow through a radiator in which engine coolant is circulated comprising a shaft adapted to be rotatably driven, first rotatable clutch means operatively connected to said shaft for rotation therewith, a housing for said first clutch means rotatably supported by said shaft, said housing having second clutch means formed thereon spaced from said first clutch means to provide a fluid shear zone therebetween, fan means secured to said housing and extending radially therefrom, a cover plate attached to said housing to form a chamber therewith, a pump plate secured to said housing between said cover plate and said first clutch means to form a fluid reservoir, said pump plate means having a fluid gate therein for conducting fluid from said reservoir into said shear zone, over-center spring valve means mounted on said pump plate means and movable between opened and closed position



with respect to said fluid gate for controlling the flow of fluid through said gate from said reservoir into said shear zone to thereby control the transmission of torque through said clutch, and electromagnetic actuator means energizable to move said spring valve means to said open position for the viscous drive of said clutch, and said spring valve means having bowed control arms means integral therewith to return said spring valve means to a closed position when the electromagnetic actuator means is deenergized.

4,265,349

HUB CLUTCH

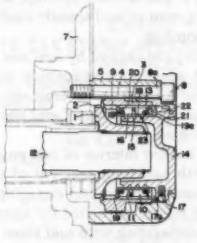
Masao Teraoka, Sano, Japan, assignor to Tochigi-Fuji Sangyo Kabushiki Kaisha, Tochigi, Japan

Filed Dec. 7, 1978, Ser. No. 968,356

Claims priority, application Japan, Dec. 12, 1977, 52-166772[U]

Int. Cl.³ F16D *19/00*

U.S. Cl. 192—95 **6 Claims**



1. A hub clutch for providing torque connection between a power shaft and a wheel hub, said hub clutch comprising:

a drive clutch adapted to be connected to a power shaft, said drive clutch having coupling teeth;

a driven clutch having coupling teeth and mounted for axial movement between an engaged position whereat said driven clutch coupling teeth mesh with said drive clutch coupling teeth and a disengaged position whereat said driven clutch coupling teeth are out of engagement with said drive clutch coupling teeth, said driven clutch having at the outer periphery thereof a plurality of axially extending substantially semi-circular grooves;

a case surrounding said driven clutch and adapted to be connected to a wheel hub;

a plurality of bolts for connecting said case to the wheel hub

said bolts having portions received within said semi-circular grooves, the engagement of said bolt portions within said semi-circular grooves comprising the sole structural connection between said driven clutch and said case;

coupling means operatively connected to said driven clutch for imparting thereto a preload; and

actuator means, connected to said driven clutch by means of said coupling means, for moving said driven clutch from said disengaged position thereof to said engaged position thereof, whereby said driven clutch is coupled to said drive clutch and the resultant torque from said driven clutch is transferred to said case solely by engagement between said semi-circular grooves and said bolt portions.

4,265,350

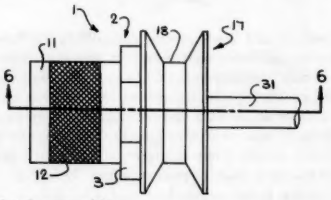
CLUTCH

Robert W. Vaughan, 1104 Rathbun Dr., Minden, La. 71055

Filed Apr. 26, 1979, Ser. No. 33,690

Int. Cl.³ F16D *11/10*

U.S. Cl. 192—95 **10 Claims**



1. A clutch comprising:

(a) a spindle mounted on a rotating shaft and characterized by a generally flat plate provided with at least one aperture extending through said plate and at least one seat provided in one face of said plate, and a spindle shaft extending through said plate in fixed relationship with a long segment of said spindle shaft projecting from one face of said plate and a short segment of said spindle shaft projecting from the opposite face of said plate;

(b) a generally cylindrically-shaped engaging knob having a hollow interior and a spindle shaft aperture at one end to receive said long segment of said spindle shaft in concentric, rotatable relationship;

(c) at least one engaging pin carried by said one end of said engaging knob and adapted to selectively register with said at least one aperture and said at least one seat in said plate upon rotational manipulation of said engaging knob with respect to said plate;

(d) bias means in said hollow interior of said engaging knob and cooperating with said long segment of said spindle shaft to bias said spindle against said engaging knob; and

(e) power transmitting means journalled for rotation on said rotating shaft and cooperating with said short segment of said spindle shaft and said engaging pins for selectively transmitting power to said shaft responsive to manipulation of said engaging pins in said at least one aperture and said at least one seat.

4,265,351

APPARATUS FOR TOTALIZING SALES

Robert E. Koetter, St. Charles, Mo., assignor to UMC Industries, Inc., Stamford, Conn.

Filed Oct. 1, 1979, Ser. No. 81,002

Int. Cl.³ G07F *9/00*

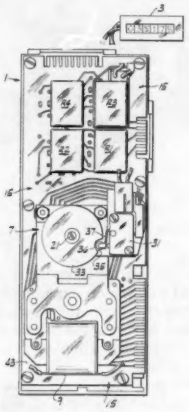
U.S. Cl. 194—1 M **12 Claims**

1. Apparatus for totalizing the sales of a vendor in response to energization of selection circuits of the vendor for vending items at different prices in the series of values 5¢, 10¢, 15¢, 20¢, 25¢, etc., each circuit being energized upon establishment of credit in the vendor at least equal to the respective price and actuation of a selection means for completing the circuit, said apparatus comprising:

an electrically actuated register operable on being electrically pulsed to register a 5¢ increment;

a switch comprising a series of fixed contacts spaced at intervals and representing amounts in said series of values in sequence at least up to the highest price, and a contact movable through a cycle from a home position successively into engagement with the fixed contacts in reverse direction so as to engage the fixed contact representing the highest amount and then to engage in succession the fixed contacts representing the successively lower amounts and then to return to home position;

means operable in response to energization of any of said selection circuits for operating said movable contact through a cycle;



control means operable in response to energization of any of said selection circuits for energizing the fixed contacts when the movable contact, moving through said cycle in said reverse direction, engages the fixed contact representing the amount corresponding to the price of the selected item under control of that selection circuit;

said fixed contacts being connected in a circuit with said register whereby, as the movable contact engages the fixed contact representing the price of the selected item, and then successively engages the remainder of the fixed contacts and returns to the home position, the register is pulsed a number of times equal to one-fifth the price of the selected item, to step up the register a number of 5¢ increments corresponding to that price.

4,265,352

BEVERAGE CONTAINER RECEIVING AND STORING APPARATUS

Douglas E. Nix, 1117 N. 12th, Duncan, Okla. 73533

Filed Apr. 12, 1979, Ser. No. 29,313

Int. Cl.³ G07F *7/06*

U.S. Cl. 194—4 D **16 Claims**

1. An apparatus for receiving and storing a carton of beverage containers, comprising:

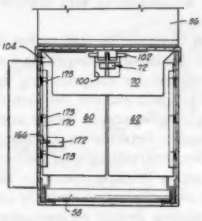
a compartment for receiving said carton, said compartment including a cover means selectively movable between an open position and a closed position, so that when said cover means is in said open position said carton may be placed in said compartment;

a means for storing a plurality of said cartons;

a means for moving said carton from said compartment to said storing means, said moving means including a gravity operated conveyor; and

a holding means, operatively associated with said cover

means, for retaining said carton in said compartment when said cover means is in said open position, and for releasing



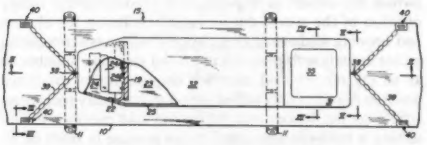
said carton so that it may move down said gravity operated conveyor to said storing means when said cover means is in said closed position.

4,265,353

CAPSULE APPARATUS FOR TRANSPORTING A DISABLED PERSON

Alvin J. Hill, Coal City, W. Va., assignor to Eastern Associated Coal Corp., Pittsburgh, Pa.

Filed Apr. 4, 1979, Ser. No. 27,182
Int. Cl.³ B65G *17/00*
U.S. Cl. 198—321 **12 Claims**



1. A capsule apparatus for transporting a disabled person, said apparatus including the combination of:

an elongated base including upstanding side walls extending about the periphery of a floor with inclined forward and aft floor sections to facilitate transporting movement along a support surface,

means within said elongated base for supporting a person therein,

elongated top sections having abutting end surfaces to form a protective top closure while supported by the side walls of said elongated base,

latch means for releasably securing said elongated top sections to said elongated base,

window means supported by one of said elongated top sections for visual monitoring of a disabled person while located within the elongated base,

conveyor means for supporting engagement with said elongated base, and

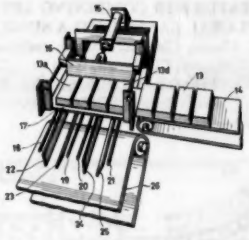
anchor means secured to opposite ends of said elongated base for preventing unintentional disengagement from said conveyor means, said anchor means including clamp means with gripping surfaces for engaging said conveyor means.

4,265,354

APPARATUS FOR POSITIONING PRISMATIC BRICKS UPON A LONGITUDINAL SMALL SIDE, SYMMETRICALLY WITH RESPECT TO EACH OTHER

Hendrik Sinnema, Sneek, Netherlands, assignor to Machinefabriek W. Hubert & Co. B.V., Sneek, Netherlands

Filed Sep. 5, 1978, Ser. No. 939,659
Claims priority, application Netherlands, Sep. 5, 1977, 7709762
Int. Cl.² B65G *47/24*
U.S. Cl. 198—374 **5 Claims**



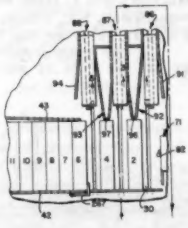
1. Apparatus for pairwise positioning prismatic bricks symmetrically with respect to each other, upon a longitudinal small side, said bricks having a pair of large surfaces, the smallest of the large surfaces facing each other, comprising a supporting face for supporting at least one pair of said bricks which are supplied lying parallel to each other, each resting upon one of the large surfaces, a pusher member being mounted above said supporting face, engaging the bricks and pushing them towards and from an edge of said supporting face, at least one pair of longitudinal supporting members protruding from said edge in the direction of travel of the bricks and being positioned excentrical with respect to the center lines of the paths of the bricks, and a supporting surface therebelow wherin the pair of bricks will rotate about said supporting members so that the smallest of the large surfaces of said bricks are facing each other on said supporting surface.

4,265,355

CIGARETTE TAX STAMP APPLYING MACHINE AND METHOD

Allan C. Davis, Baltimore, Md., assignor to The Meyercord Co., Carol Stream, Ill.

Filed Dec. 18, 1978, Ser. No. 970,256
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—427 **14 Claims**



1. Apparatus for processing cartons of cigarettes, comprising an input platform adapted to receive a lineup of cartons in side-by-side relation, the cartons being oriented so that the cigarette packages are standing on end and the carton flaps are uppermost, means forming a plurality of parallel, laterally spaced channels, said channels being spaced a distance that is approximately equal to the thickness of said each of said car-

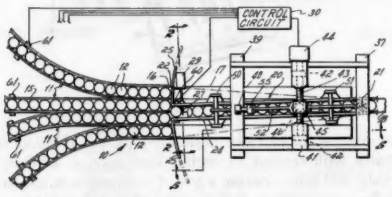
tons, stop means adjacent said platform for stopping said lineup with alternate cartons substantially in line with said channels, carton feeding means for moving cartons onto said platform and in a direction that is substantially perpendicular to said channels and toward said stop means, means for moving said alternate cartons into said channels, said alternate cartons being spaced due to the interleaving cartons, and separator means between said channels for holding said interleaving cartons.

4,265,356

APPARATUS FOR COMBINING ARTICLES FROM PLURAL LANES INTO A SINGLE LANE

Charles G. Glover, Cincinnati, Ohio, assignor to The Lodge & Shipley Company, Cincinnati, Ohio

Filed Aug. 20, 1979, Ser. No. 68,076
Int. Cl.[3] B65G 43/00
U.S. Cl. 198—444 **1 Claim**



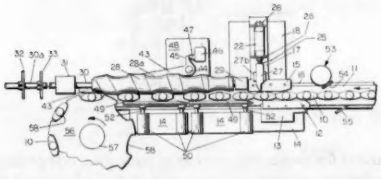
1. Combining apparatus comprising,
plural conveyor lanes moving in a first direction,
means associated with each of said plural conveyor lanes for determining presence of a preselected number of bottles in each of said plural lanes,
a single conveyor lane moving in said first direction and having an upstream end located downstream of the downstream end of said plural conveyor lanes,
a pivotal guide having a downstream end pivoted adjacent said single conveyor lane, and an upstream end swingable to positions adjacent any of said plural lanes,
means for counting the bottles passing through said pivotal guide,
and means for selectively swinging said pivotal guide to each of said positions after a preselected number of bottles has passed into said guide,
said pivotal guide being shifted only to a position wherein a preselected number of bottles has been determined to be present in the lane associated with that position.

4,265,357

ARTICLE INFEED GATE AND CONTROL THEREFOR

Stephen W. Amberg, and Clyde F. Hadl, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 11, 1977, Ser. No. 786,741
Int. Cl.[3] B65G 47/26
U.S. Cl. 198—460 **1 Claim**



1. An article handling mechanism comprising a driven conveyor having a rotary infeed worm rotatably supported by a horizontal shaft controlling movement of articles into a machine for treating articles, said infeed worm having an inlet receiving said articles and an outlet advancing them into said machine at equal spacings,
said conveyor advancing said articles to said worm inlet and adapted for accumulating said articles upstream of said worm,
a gate adjacent the inlet of said worm for controlling the supply of articles thereto comprising a wedge-shaped gate member supported for reciprocating movement laterally of the conveyor into and out the path of articles thereon,
a reciprocating fluid-operated motor connected to actuate said gate member between an extended position into the path of articles for arresting their movement to the inlet of said worm and a retracted position for feeding articles thereto, said motor being operatively connected to a solenoid for regulating its said reciprocating movement, and
means connected to the solenoid for causing operation of said motor in response to said accumulated articles comprising an electric energizing circuit connected to said solenoid for energizing the latter, at least one circuit closing qualifying contact in series in said circuit comprising a photoelectric switch device positioned across the conveyor upstream of said gate member and in the proximity thereof enabling actuation of said gate member to its retracted position by presence of articles on the conveyor opposite said switch device and actuation to its extended position when there are no articles opposite said switch device, the energizing circuit de-energizing the solenoid by insufficient upstream articles to cause said gate member to be moved to its extended position, and said qualifying contact being operable for energizing the solenoid by the presence of articles upstream of said gate member to cause it to be moved to its retracted position, and
switch means in said energizing circuit and connected to the shaft of said rotary infeed worm operable for opening or closing said circuit at a predetermined point during a revolution of said shaft and synchronizing actuation of said gate member to its said extended and retracted positions, respectively, corresponding with a rotary position of said infeed worm, said switch means comprising plural proximity switches in circuit with said photoelectric switch and closed in response to a predetermined rotary position of the worm during each revolution for closing and opening said energizing circuit thereby synchronizing motor actuation to retract and extend said gate member so as to (a) retract said member responsive to rotational position of said rotary infeed worm to smoothly receive an article on the worm, and (b) extend said member for inserting it between adjacent articles passing in front of it.

4,265,358

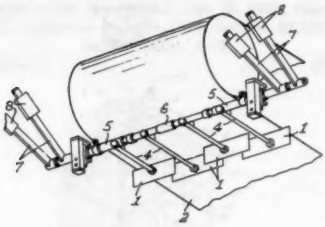
CONVEYOR BELT CLEANER AND SCRAPER BLADE THEREFOR

Willem D. Veenhof, 3 Rambler Rd., Kensington, Johannesburg, Transvaal Province, South Africa

Filed Jun. 7, 1979, Ser. No. 46,225
Claims priority, application South Africa, Jun. 15, 1978, 78/3442
Int. Cl.[3] B65G 45/00
U.S. Cl. 198—499 **7 Claims**

1. A conveyor belt cleaner comprising at least one scraper blade adapted to clean the surface of a conveyor belt as a result of its being urged towards said conveyor belt surface, the conveyor belt being characterized in that the scraper blade extends transversely with respect to the belt and is rotatable about an effecive axis extending transversely with respect to the belt so that the scraper blade can assume either of two terminal positions in both of which the angle of approach is an acute angle and the scraper blade contacts the belt, said axis being formed by providing on the scraper blade at least one socket on its length which cooperates with a blade-like support, said socket having a larger interior dimension than the exterior dimension of said support to provide a loose coupling

of the two such that said axis is positioned within and extends along the length of said socket to allow the opposite edge of



said scraper blade to be rocked back and forth about said axis to assume one of said terminal positions.

4,265,359

SCRAPER ASSEMBLY FOR A SCRAPER CHAIN CONVEYOR

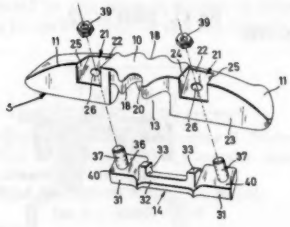
Helmut Temme, Waltrop, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,509

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807883

Int. Cl.³ B65G *19/24*

U.S. Cl. 198—731 **26 Claims**



1. In a scraper chain arrangement for a scraper chain conveyor, the scraper chain arrangement comprising a conveyor drive chain and a plurality of scraper assemblies, each scraper assembly comprising a scraper and a locking member which are connected together by means of threaded elements, the scraper and the locking member being formed with cooperating shaped parts which define a bed for a link of the chain of the conveyor, each scraper assembly being attached to the chain with a respective chain link clamped in the bed defined by cooperating shaped parts of the connected scraper and locking member of each said scraper assembly, the improvement comprising inclining each said threaded element at an acute angle to the plane of said bed and in the direction of movement of the scraper chain arrangement, said threaded elements passing through aligned holes of the scraper and the locking member, said holes being inclined at said acute angle with respect to the plane of said bed and terminating in inclined recesses formed in the upper surface of said scraper.

4,265,360

ARTICLE TRANSFER ARRANGEMENT

Yulian Khodos, Overland Park, Kans., assignor to Mid-West Conveyor Co., Inc., Kansas City, Kans.

Filed Apr. 23, 1979, Ser. No. 32,121

Int. Cl.³ B65G *25/02, 17/48*

U.S. Cl. 198—774 **16 Claims**

1. In an article transfer arrangement, the combination comprising:

(a) a movable article carrier having first and second spaced apart ends;

(b) a drive member arranged in an elongated endless loop having an upper run and a lower run and spaced apart end turns;

(c) motor means operatively connected to said drive member and propelling same in said endless loop;

(d) means connecting said drive member to said carrier to thereby move said first end about said loop by lifting said first end upon movement thereof about one of said end turns for effecting supporting engagement of said carrier with an article and for movement thereof toward the other of said end turns with said first end lifted during movement of said first end alorg said upper run; and to thereby lower said first end upon movement about the other of said end turns for disengagement of said carrier from said article and for return of said carrier toward said one end turn with said first end lowered; and

(e) track means extending substantially parallel with said drive member and supporting said second end.

4,265,361

APPARATUS FOR HANDLING WOUND ROLLS OF FIBROUS WEBS

Roger A. Schroeder, Green Bay, Wis., assignor to American Can Company, Greenwich, Conn.

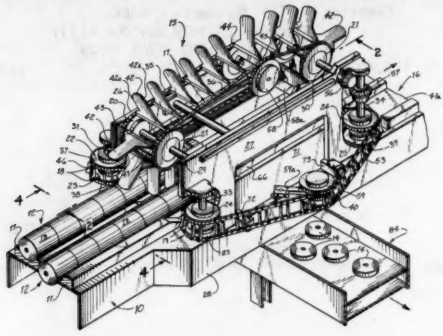
Filed Oct. 10, 1979, Ser. No. 83,525

Int. Cl.³ B07C *5/36*

U.S. Cl. 209—617 **16 Claims**

1. An apparatus for transporting elongate rolls of material cut into short rolls of predetermined uniform lengths, and having end rolls of trim of different lengths therefrom to be discarded, comprising: means defining a pair of parallel paths along which a pair of cut rolls may move longitudinally; means for moving said parallel cut rolls simultaneously along said parallel paths including a plurality of movable paddle members extending between said cut rolls and so spaced in the direction of movement of the latter as to engage the confronting sides of each roll, and a plurality of movable saddle members extending into engagement with sides of said short rolls opposite the sides engaged by said paddle members, there being a pair of saddle members for each said paddle member, the recited engagement by said members being effective to support only said short rolls

and not said end rolls of trim; and means accommodating gravitational removal of said end rolls of trim to discard the same, upon movement of said cut rolls along said parallel paths.



4,265,362

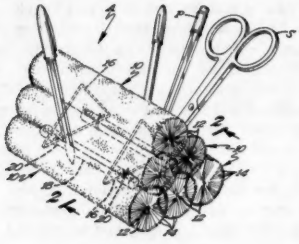
DEVICE FOR RELEASABLY HOLDING RELATIVELY SLIM ARTICLES

Elaine Suonvieri, 3rd Ave. & Hickory Sts., Floodwood, Minn. 55736

Filed Jun. 8, 1979, Ser. No. 46,649

Int. Cl.³ A47F *7/00*

U.S. Cl. 211—60 R **1 Claim**



1. A device for releasably holding relatively slim articles comprising in combination:

(a) at least three elongated segments any two of which forms a base, each segment including a multiplicity of bristles extending radially, from

(b) an elongated axial core with the bristles of each segment in overlapping interengagement with the bristles of each of the other segments in triangular formations and

(c) means holding said segments together

including at least one band secured about the cores of the segments normal to the longitudinal axis of the cores.

4,265,363

CONTAINER WITH DRINKING TUBE

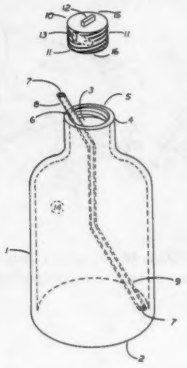
John L. Conn, P.O. Box 4501 - Sta. B, Spartanburg, S.C. 29303

Filed Nov. 26, 1979, Ser. No. 97,828

Int. Cl.³ B65D *25/38*

U.S. Cl. 215—229 **2 Claims**

1. In combination, a hollow container having a cylindrically shaped side wall, a bottom and an internally threaded neck having an opening and a rim area and a solid externally threaded closure cap for threaded engagement with said internally threaded neck, said cap having a centrally mounted, raised, finger grip on the top surface of said cap, said cap having an opening for receiving a flexible drinking tube, said opening extending through the top outer threaded perimeter of said cap and extending downwardly and diagonally through the bottom central area of said cap.



4,265,364

BOTTLE CAP

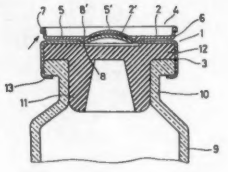
Isamu Baba, Ikoma, Japan, assignor to Zenyu Kinzoku Co., Ltd., Osaka, Japan

Filed Aug. 16, 1979, Ser. No. 67,186

Claims priority, application Japan, Aug. 25, 1978, 53-117173[U]

Int. Cl.³ B65D *41/42*

U.S. Cl. 215—249 **8 Claims**



1. A bottle cap comprising;

a cap main body having a circular top plate and a side wall downwardly depending from the peripheral edge of said top plate and adapted to be rolled in toward the outer surface of the neck of a bottle,

a removable member having a circular base plate and a peripheral edge thereof to which a removing force is to be applied,

said cap main body and said removable member being of metallic material,

said base plate of said removable member being overlapped onto said top plate of said cap main body,

said top plate of said cap main body and said base plate of said removable member being securely fixed to each other by cold pressure welding forming pressed concave portions of annular shape in said top plate and said base plate, and

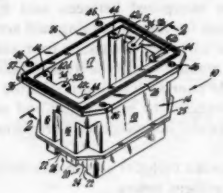
upwardly expanded portions formed within said pressed concave portions of said top plate and said base plate.

4,265,365

MOISTURE RESISTANT ELECTRICAL OUTLET BOX

William C. Boteler, Northport, N.Y., assignor to Slater Electric Inc., Glen Cove; N.Y.

Continuation of Ser. No. 900,697, Apr. 28, 1978, abandoned.
This application Nov. 29, 1979, Ser. No. 98,509
Int. Cl.[3] H02G 3/08
U.S. Cl. 220—3.3 16 Claims



1. A moisture resistant electrical outlet box which comprises:

an integral wall structure including a backwall member and a generally continuous sidewall member extending from said backwall to define a chamber in said box and said sidewall providing an opening to said chamber at its front edges, said front edges including a mounting flange member therearound;

cable-access port means formed in said wall structure adapted to provide access to the chamber in said box for one or more electrical cables; and

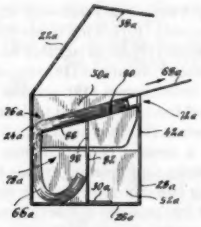
deflecting means formed on said sidewall member, integrally therewith, said deflecting means substantially surrounding said box and being located generally rearward of said mounting flange, yet in front of all said port means, said deflecting means comprising a continuous drip rail projecting outwardly from the exterior surface of said sidewall member around the entire box to prevent any moisture collected on said sidewall member in front of said deflecting means from entering said box through said port means.

4,265,366

DISPENSING CONTAINER

Joseph F. Schillinger, Morrison, and Arthur R. Nielsen, Hickory Hills, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Nov. 21, 1979, Ser. No. 96,504
Int. Cl.[3] B65D 85/48
U.S. Cl. 221—33 7 Claims



1. A container for dispensing a stack of flexible sheets of material, comprising:

a front, rear, top, bottom and end walls joined together to form an enclosure having open interior areas,

said enclosure including a dispensing opening therein in an upper section thereof through which individual ones of said sheets of material may be dispensed,

a platform disposed within said interior areas of said enclosure and joined to certain of said walls,

said platform extending essentially coextensive with said opening and having one edge thereof disposed proximal to said front wall adjacent upper portions of the latter,

said platform being disposed in an inclined position extending rearwardly downward away from said front wall toward said rear wall,

the opposite edge of said platform being spaced from said rear wall and defining a slot therebetween communicating with said opening,

said stack of sheets being adapted to be disposed in overlaying relationship to said platform whereby to be supported at an elevated position within said enclosure adjacent said opening,

portions of said stack extending through said slot into an area of said enclosure beneath said platform, and

a support panel extending between said bottom wall and said platform for supporting the latter in said inclined position thereof,

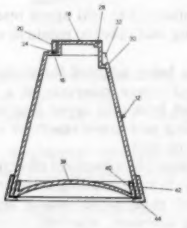
said opposite edge of said platform being defined by an extension formed integral with said platform, said support panel being connected to said platform by spaced fold lines on opposite lateral sides of said extension.

4,265,367

EASY OPENING TOP CLOSURE MEMBER FOR A CONTAINER

Kuno J. Vogt, 4250½ Fairmount Ave., San Diego, Calif. 92105

Filed Feb. 28, 1980, Ser. No. 125,649
Int. Cl.[3] B65D 17/34
U.S. Cl. 220—269 12 Claims



1. A container comprising:

a body portion having a closure wall member of a predetermined thickness, said closure wall member having an outer surface and an inner surface;

groove means on said inner surface defining a tab-like closure member; amd

gripping means on said outer surface which is frangibly connected to the outer surface of said closure wall member whereby when said gripping means is frangibly separated from the outer surface of said closure wall member, said tab-like closure member can be lifted upwardly to expose the interior of the body portion of the container.

4,265,368

HOPPER FOR MECHANICAL SEED PLANTERS

Floyd L. Feltrop, 203 E. Shawnee, Paola, Kans. 66071

Filed Dec. 26, 1978, Ser. No. 972,695
Int. Cl.[3] A01C 7/18
U.S. Cl. 221—10 1 Claim

1. A hopper for a mechanical seed planter, said hopper comprising:

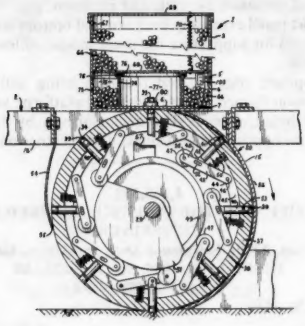
(a) an upper reservoir shaped for retaining seed therein and including a side wall and a bottom, said bottom having an aperture therethrough;

(b) a lower reservoir disposed below said upper reservoir, shaped for retaining seed therein, and including a side wall

and a bottom; said lower reservoir being rotatably mounted in said hopper, said seed therein rotating substantially with said lower reservoir whereby abrasion to said seeds is minimized; the bottom of said lower reservoir including at least one metering aperture therethrough shaped to receive one of said seeds therein;

(c) a valve positioned in said upper reservoir bottom aperture, said valve including an arcuately shaped upper portion rotatably mounted in said upper reservoir bottom and having an open position wherein seeds are allowed to flow under gravitational forces from said upper reservoir into said lower reservoir and having a closed position;

(2) a lower portion integrally connected to said upper portion and extending into said lower reservoir whereby engagement with the seeds therein causes said upper portion to rotate to said closed position;



(3) means connected to said upper reservoir bottom resiliently urging said valve to rotate to said closed position; and

(4) said valve being adapted for maintaining the level of seed in said lower reservoir at a height below and spaced apart from said upper reservoir bottom;

(d) means rotating said lower reservoir with respect to said upper reservoir; and

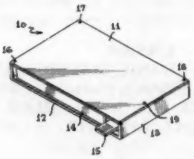
(e) a stationary base plate disposed directly below said lower reservoir bottom and including a discharge aperture therethrough which is circumferentially aligned to mate with said metering aperture; whereby rotation of said lower reservoir sequentially aligns said metering and discharge apertures for accurate seed planting without abrading the seeds.

4,265,369

TAPE CARTRIDGE DISPENSER

Michel F. Aboussouan, 10609 Jimenez St., Lakeview Terrace, Calif. 91342

Filed Feb. 9, 1979, Ser. No. 10,819
Int. Cl.³ B65D *85/672*
U.S. Cl. 221—87 **8 Claims**



1. A holder apparatus for storing a tape cartridge or cassette comprising the combination of:

a holder having opposite side panels separated by a U-shaped spacer so as to define a storage compartment for storing the tape cartridge or cassette between the opposing surfaces of said side panels and said U-shaped spacer;

actuator means operably carried on said holder movable within said storage compartment to slide back and forth for limited movement to accept or eject the tape cartridge or cassette;

latch means operably carried on said holder and cooperatively connected to said actuator means for selectively releasing said actuator means; and

resilient means interposed between said spacer and said actuator means for forcibly urging said actuator means to eject the tape cartridge or cassette from said storage compartment in reponse to release by said latch means;

said holder side panels including a selected side panel detachably connected to said spacer and said connection including pins and holes indexed in registry in an interference fit;

said actuator means includes a push member carried on the end of said resilient means;

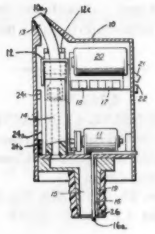
guide means carried on said side panel opposite to said selected side panel for guiding sliding movement of said push member in a rectilinear manner.

4,265,370

PORTABLE LIQUID METERING DEVICE

David H. Reilly, 508 Solar Dr., Fort Lauderdale, Fla. 33301

Filed Mar. 22, 1979, Ser. No. 22,984
Int. Cl.³ B67D *5/30*
U.S. Cl. 222—25 **4 Claims**

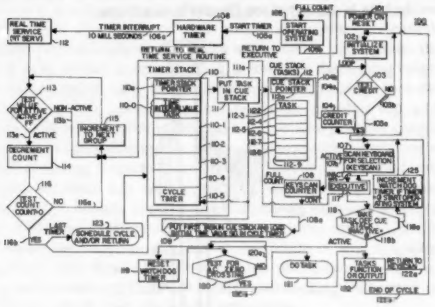


1. A self-contained portable liquid metering and dispensing device comprising: a housing (**10**) having upper pouring means (**10***a*) and lower inlet means (**19**) for detachably securing to the opening of a liquid container; air means (**16**) extending through said housing into said lower means (**19**); conduit means connecting said pouring and lower means and including a flexible resilient portion (**13**), means (**12***a*) for pinching off flow in said resilient portion (**13**), a reverse polarity motor means (**11**) connected to and actuating said pinching means (**12***a*); power means (**20**) for actuating said motor means (**11**); movable magnet means (**24***b*) moved by tipping of the device; switch means (**24**) actuated by said magnet means (**24***g*); logic means (**100**) actuated by said switch means (**24**) to cause said motor means to rotate to release said pinching means (**12***a*) from said resilient portion (**13**), stop rotation for a predetermined period of time and then rotate on reverse to pinch off said resilient portion (**13**); and means (**17**) for counting and displaying the number of actuations of said switch means (**24**); all of said means being carried completely by said housing.

4,265,371
FOODSTUFF VENDING APPARATUS EMPLOYING IMPROVED SOLID-STATE TYPE CONTROL APPARATUS

Mahendrakumar D. Desai, Colonia, N.J., and Drew Henderson, Georgetown, Conn., assignors to Trafalgar Industries Inc., New York, N.Y.

Filed Oct. 6, 1978, Ser. No. 949,052
Int. Cl.³ B67D *5/06*
U.S. Cl. 222—70 **42 Claims**



1. Means for dispensing a predetermined quantity of material comprising:

a source of said material;

normally disabled dispensing means for dispensing a measured amount of said material from said source when enabled;

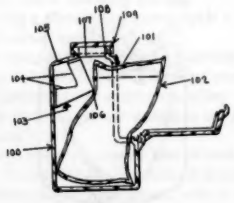
means responsive to a dispensing request signal for enabling said dispensing means;

timing means responsive to the enabling of said dispensing means for disabling said dispensing means a selectable time interval after enablement, said timing means including switch means comprising an input, a plurality of outputs and a settable switch arm for selectively coupling said input to one of said outputs in accordance with the selected time interval, counter means and transfer means responsive to the setting of the switch means for setting a count in the counter means representing the length of time said dispensing means is enabled, and means for altering the count in said counter means.

4,265,372
CONTAINER AND DISPENSER-CUTTER UNIT COMBINATION FOR CONTAINING AND HOLDING DETACHABLE FLEXIBLE FORM-FILL-SEAL PLASTIC POUCHES

Lawrence Wainberg, 66 Forden Crescent, Westmount, Montreal, Quebec, Canada (H3Y 2Y4)

Filed Mar. 30, 1979, Ser. No. 25,728
Int. Cl.³ B67B *7/28*
U.S. Cl. 222—82 **5 Claims**

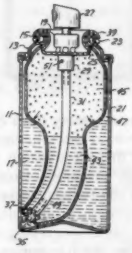


1. In a container and a dispenser-cutter unit combination adapted to contain and hold a detachable flexible form-fill-seal plastic pouch containing fluids, granules and the like, a container having top and bottom walls and a dispenser side-fill entrance, a spout formed integrally with said top wall and projecting upwardly therefrom, a side hinged closure wall forming a part of said container and adapted to close and open the dispenser side-fill entrance, a dispenser pouch cutter forming an operative part of said container and projecting inwardly therein, and a closure cap for said spout, said dispenser pouch cutter being formed in a V-shaped knife secured to the inner surfaces of said container and the apex of said knife being directed toward said dispenser side-fill entrance of said container.

4,265,373
PRESSURIZED DISPENSER WITH DIP TUBE EXTENDING THROUGH SAC-IN-CAN

William R. Stoody, 15472 Collins Ave., Romulus, Mich. 48174

Filed May 23, 1979, Ser. No. 41,867
Int. Cl.³ B65D *35/28*
U.S. Cl. 222—94 **4 Claims**



1. A portable self-contained pressurized aerosol type dispenser comprising a rigid walled closed buttom container including a top closure having an outwardly curled annular opening;

a dispensing valve mechanism having at least a retaining cup secured in closing relation with the curled annular opening;

a valve body having shut-off components housed therein and product inlet passage;

an outwardly protruding movable discharge nozzle in communication with the shut-off components;

a dip tube having an open end depending from the valve body in communication with the inlet passage for delivery of a fluid product therethrough from the container;

a pliable impervious sac within the container adapted to expand to the internal extremities of the container, and having an annular open end secured in sealing engagement with the valve mechanism;

said container adapted to store a dispensible product, under pressure, intermediate the container and exterior surfaces of the sac;

said sac adapted to receive and confine therein a propellant gas that acts upon internal surfaces of the sac expanding the sac thereby exerting an expulsion force upon the product;

the open end of the dip tube extending through and sealed relative to the sac, providing an enclosed passageway within the sac for the conveyance of the product therethrough;

the valve mechanism being in communication with the interior of said container through said dip tube for dispensing said product from said container and into said dip tube and valve mechanism;

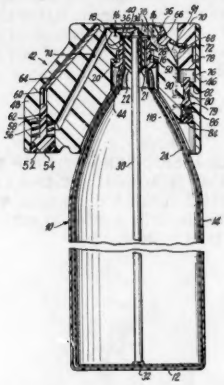
the valve mechanism having limited communication with the interior of the sac for releasing propellant vapors as well as said product through said nozzle.

4,265,374

PRESSURE LIQUID DISPENSER

Adam Sebalos, 3467 Kennedy Blvd., Jersey City, N.J. 07307

Filed Apr. 2, 1979, Ser. No. 25,852
Int. Cl.[3] B65D *35/28, 47/00*
U.S. Cl. 222—95 **9 Claims**



1. A liquid dispenser assembly for a container having liquid therein comprising: an insert plug having a passageway associated therewith being disposed within the inlet to said container, said passageway extending from said insert plug into said container toward the bottom thereof adapted for having liquid passing therethrough, a main dispenser body securely fastened with said container overlying said insert plug, liquid expulsion passageway means in communication with said insert passageway and terminating in said dispenser body at an end thereof comprising a liquid outlet port and having normally closed valve means at said end, first means coupling a first source of pressurized gas in said main dispenser body for operable communication with said liquid, actuatable button means mounted on said main body and connected with said valve means for causing said valve means to open said liquid outlet port whereupon liquid flows through said liquid passageway out from said container and said dispenser assembly, said button means operably associated with a valve assembly within said first means and causing said pressurized gas to assist in expulsion of liquid from said container upon activation of said button means to open said valve means in expulsion of seal means between said insert plug and said main body for confining the liquid to said liquid passageway during expulsion thereof from said container and through said liquid dispenser, relief valve means mounted within said liquid dispenser body in communication with the interior of said container for exhausting pressurized gas from said container to the atmosphere in the event of excessive pressurization within said container, and second means coupling a second source of pressurized gas in said main body for cooperation with said first source to assist in expulsion of said liquid when needed.

4,265,375

SAFETY DISPENSING APPARATUS FOR FLAMMABLE LIQUIDS

Frank S. Flider, Mattoon, Ill., assignor to Justrite Manufacturing Company, Mattoon, Ill.

Continuation-in-part of Ser. No. 752,397, Dec. 20, 1976, abandoned. This application Sep. 21, 1978, Ser. No. 944,585
Int. Cl.[3] B67D *5/42*
U.S. Cl. 222—189 **2 Claims**

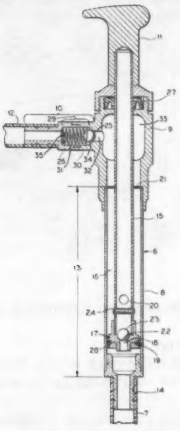
1. In a safety dispensing apparatus for dispensing flammable liquids from a container, said apparatus of the type having a reciprocating piston within a body, a piston rod attached at one end to said piston and at another end to a handle, said piston moveable by operating said handle through an upstroke and a downstroke, said apparatus defining a flow path for said liquids from said container, through said apparatus to a spout structure, the improvement comprising:

means positioned within said spout structure to check the flow of said liquid therethrough;

means operable to defeat said check means only when said handle is moved through said upstroke;

a liquid chamber positioned intermediate said spout structure and said piston,

said piston fitting liquid-tightly within said chamber, wherein liquid is drawn into said chamber when said handle is moved through said downstroke,



said defeat means including a one-way valve formed through said piston whereby liquid in said chamber may pass from upstream of said piston to downstream of said piston during said downstroke, but is prevented from flowing back when said handle is moved through said upstroke; and

means to arrest combustion of said liquid within said chamber,

said arresting means including an annular perforated disk positioned intermediate said spout structure and said piston, and

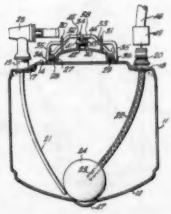
said arresting means positioned about said piston rod.

4,265,376

BEVERAGE CARBONATION AND DISPENSING CONTAINER

Seymour S. Skidell, 3400 Pine Tree Dr., Miami Beach, Fla. 33140

Filed May 16, 1979, Ser. No. 39,513
Int. Cl.[3] B01F *3/04*
U.S. Cl. 222—189 **5 Claims**



1. A portable beverage carbonation and dispensing container

comprising, in combination, a substantially cylindrical container member having integrally formed side wall, bottom wall and top wall portions, said bottom wall portion being convexly-rounded in the outwardly-projecting direction, and having a central, relatively small-diameter spheroidal protrusion serving as a pivotal point for the rocking and rotative spinning of said cylindrical container about its axis of symmetry, said top wall portion having an ellipsoidal access opening, an ellipsoidal closure cap member having a marginal, peripheral upper surface portion of such size as to overlay a marginal inside portion of said top wall access opening when said closure cap member is concentrically disposed with respect to said access opening at the inside of said container member, releasable means for sealingly constraining said closure cap against the underside of said access opening, a beverage dispensing spigot communicating with the interior of said container member through a first opening in said container member top wall portion and fixed with respect to said top wall portion, carbon dioxide gas coupling means communicating with the interior of said container member through a second opening in said container member top wall portion, a spherical, porous stone member, a flexible conduit communicating between a central portion of said spherical porous stone member and said carbon dioxide gas coupling member at the inside of said container member, and handle means secured to said container member top wall portion to facilitate turning and rocking said container member about said spheroidal protrusion.

4,265,377

MULTIPLE NOZZLE FLUID DISPENSER HAVING UNIFORM OPENINGS IN AN OPERATING BAR

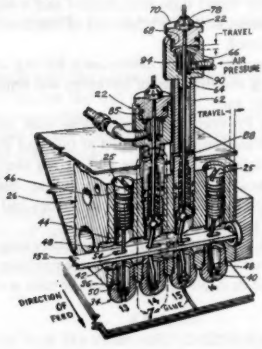
Lenard E. Moen, 7914 Michigan, Whittier, Calif. 90602

Continuation-in-part of Ser. No. 846,899, Oct. 31, 1979, Pat. No. 4,157,149. This application Jan. 12, 1979, Ser. No. 3,081

The portion of the term of this patent subsequent to Jun. 5, 1996, has been disclaimed.

Int. Cl.[3] B67D *3/00*

U.S. Cl. 222—486 **6 Claims**



1. In a multiple valve assembly having:

a body including a plurality of valves with a corresponding plurality of valve seats;

a first one of said valves including a laterally flexible valve stem having a valve element at one end movable into and from engagement with a corresponding valve seat by lateral deflection of said valve stem to open and close the corresponding valve;

a second, independently actuable one of said valves including a valve rod having a valve element at one end movable into and from seating engagement with a corresponding valve seat by axial movement of said valve rod to open and close the corresponding valve;

a valve actuator for said independently actuable valve secured to the opposite end of said valve rod to move the latter axially;

said body containing a bore traversed by said valve stem and said valve rod; and

operating means for said first valve movable in said body bore for exerting lateral deflecting forces of said flexible valve stem only;

the improvement wherein:

said valve operating means comprises an operating bar movable longitudinally in said body bore through a given stroke and having clearance openings through which said valve stem and valve rod extend, and

means for accommodating said operating bar openings to said stem and to said rod such that the bar exerts lateral deflecting forces on said flexible valve stem only during movement of the bar through said given stroke,

said accommodating means comprising uniform bar openings and cooperating shape characteristics of said valve rod.

4,265,378

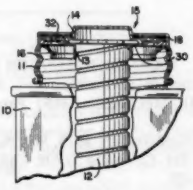
REVERSIBLE CLOSURE-SPOUT ASSEMBLY

Andrew S. Bianco, Lima, Ohio, assignor to Huffy Corporation, Miamisburg, Ohio

Filed Jan. 31, 1979, Ser. No. 8,119

Int. Cl.[3] B65D *47/06*

U.S. Cl. 222—539 **16 Claims**



1. A reversible closure-spout assembly including a tube having an outwardly projecting flange mounted thereon adjacent an inlet thereof, said flange including an inner annular portion immediately adjacent said tube and an outer annular portion disposed outwardly of said inner annular portion, a sealing member mounted on said flange, said sealing member including a central section, an inner annular section and an outer edge section surrounding said inner annular section, said central section including an axially extending annular wall projecting away from said tube and a lid spanning said annular wall, a plurality of ribs positioned between and spacing said inner annular portion of said flange from said inner annular section of said sealing member, and means defining openings through said inner annular section of said sealing member whereby liquid may flow through said openings in said inner annular section, around said ribs and between said inner annular portion of said flange and said inner annular section of said sealing member and into said inlet end of said tube.

4,265,379

CLOSURE ELEMENT OF A SLIDE CLOSURE FOR USE IN LIQUID MELT CONTAINERS

Ernst Meier, Wollerau, Switzerland, assignor to Stopinc Aktiengesellschaft, Zug, Switzerland

Filed May 8, 1979, Ser. No. 37,147

Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821839

Int. Cl.[3] B22D *41/08*

U.S. Cl. 222—600 **12 Claims**

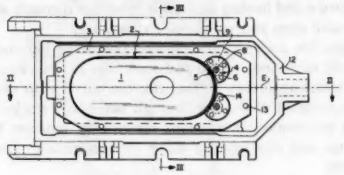
1. A closure element of a slide closure for use in liquid melt containers, said closure element comprising:

a plate member including a refractory element which is

subject to wear, said plate member having spaced sides and spaced ends;

a support frame for supporting said plate member; and

eccentric means, mounted on said support frame, for detachably fastening said plate member within said support frame, said eccentric means comprising at least one eccentric member located adjacent one of said ends of said plate member, at a position offset from a longitudinal plane



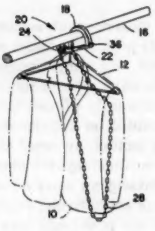
extending centrally of said sides and transverse to the plane of said plate member, said eccentric member having eccentric surface means, directly bearing on said one end of said plate member, for imparting to said plate member forces including a force component extending parallel to the longitudinal direction of said plate member and a force component extending transverse to such longitudinal direction.

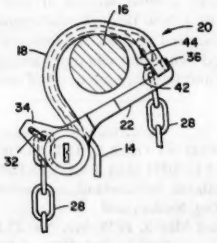
4,265,380

GARMENT HANGER LOCK

Noel E. Webster, 4811 Alhambra Ave., Martinez, Calif. 94553, and Gary D. McLaughlin, 4051 Fairfax Dr., Napa, Calif. 94588

Filed Jul. 26, 1979, Ser. No. 61,017
Int. Cl.[3] **A47J** *51/08;* **E05B** *65/00*
U.S. Cl. 223—85 **9 Claims**





1. A security device for individually securing the hanging hook of a conventional clothes hanger to a hanger bar, comprising:

(a) a generally hook-shaped first portion for engaging said hanger bar, said first portion being shaped to releasably encompass a substantial portion of the hook of said clothes hanger when said first portion engages said hanger bar;

(b) a second portion movable into and out of a position where it cooperates with said first portion to prevent disengagement of said first portion from said hanger bar; and

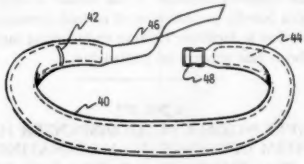
(c) locking means arranged to selectively lock said second portion to said first portion into said disengagement-preventing position.

4,265,381

BEVERAGE AND LIQUIFIED FOOD BELT

Steven C. Muscatell, 288 Douglas Ave., Boulder Creek, Calif. 95006

Continuation-in-part of Ser. No. 937,105, Aug. 25, 1978. This application Feb. 26, 1979, Ser. No. 15,464
Int. Cl.[3] **A45C** *1/04*
U.S. Cl. 224—148 **3 Claims**



1. A belt for carrying beverages and liquified food comprising:

a flexible hollow tube for containing the beverage and liquified food, having a first closure means mounted at one end of the tube for liquid tight seal thereof and a second closure means mounted at the other end of the tube for liquid tight seal thereof;

said first and second closure means each having removable caps for filling and draining of beverage and liquified food from the tube; and

an outer sleeve for containing the hollow tube, having fastening means continuously formed at one end thereof for circumferentially attaching one end of the sleeve to the other, and having an opening adjacent an end of said sleeve for withdrawal of the tube therefrom and insertion of the tube therein;

said opening in the sleeve being substantially aligned with the first closure means for filling or emptying the tube with beverage or liquified food when the tube is contained in the sleeve.

4,265,382

MULTI PURPOSE CARRIER FOR VEHICLE

Thomas M. Edwards, 6405 Smoke Rise Trail, Flint, Mich. 48507

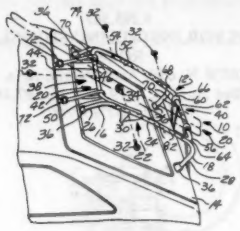
Filed Oct. 12, 1979, Ser. No. 84,375
Int. Cl.[3] **B60R** *19/02*
U.S. Cl. 224—320 **11 Claims**

1. A multi-purpose carrier for vehicles comprising:

a pair of opposed spaced apart telescoping end pieces spaced above the vehicle with ends meeting a vehicle surface, the telescoping end pieces being extensible and retractable to adjust the length of said carrier;

a pair of opposed spaced apart telescoping transverse mem-

bers spaced above the vehicle surface and extending between end pieces, the telescoping transverse members



extensible and retractable to selectively adjust the spacing of the end pieces.

4,265,383

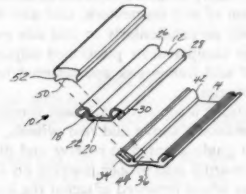
SLAT ASSEMBLY

Douglas J. Ferguson, Davisburg, Mich., assignor to Four Star Corporation, Troy, Mich.

Filed Apr. 27, 1979, Ser. No. 33,882

Int. Cl.³ B60R *9/04*

U.S. Cl. 224—326 **6 Claims**



1. A slat assembly for an automobile luggage rack comprising:

a slat,

a mounting pad, the mounting pad being configured to nestingly receive the slat,

the slat comprising an elongated member, and including channel means for interengaging said mounting pad,

said pad comprising:

a base,

a pair of spaced apart, upwardly diverging side walls extending upwardly from the extending base,

a pair of spaced apart mounting flanges extending upwardly from the base, the flanges comprising means for interengaging the slat.

4,265,384

AIR BAR HAVING ASYMMETRICAL INLET

Robert A. Daane, Green Bay, Wis., assignor to W. R. Grace & Co., New York, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,804

Int. Cl.³ B65H *17/32*

U.S. Cl. 226—97 **4 Claims**

4. In an air bar by which a pair of air streams are directed forwardly to impinge against a surface of a running web, said air bar being elongated to extend in a direction widthwise of the web and having a hollow interior from which a pair of sidewardly spaced apart outlets at the front of the air bar open forwardly, said outlets extending along the length of the air bar and being parallel to a plane which lies midway between them and which extends in a forward and rearward direction through the air bar,

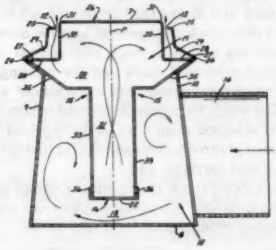
flow controlling means for causing like streams of air to issue from said outlets even though pressure air is introduced into the hollow interior of the air bar asymmetrically to said plane, said flow controlling means comprising:

partition means in the interior of the air bar, disposed symmetrically to said plane and of uniform cross-section all along the length of the air bar, said partition means being arranged to define in the air bar interior

(1) a flow-directing chamber which has

(a) a rear portion with substantially forwardly extending walls that are spaced apart by a distance substantially less than the distance between said outlets and including port means and

(b) a front portion substantially wider than said rear portion and into which said rear portion opens forwardly, said front portion having laterally opposite



extremity zones, each of which is communicated with one of said outlets and is rearwardly substantially in line with the outlet with which it is communicated; and

(2) an inlet chamber which is behind said front portion of the flow-directing chamber and a portion of which is behind said rear portion of the flow-directing chamber, said inlet chamber

(a) having an inlet through which pressure air enters the interior of the air bar and

(b) being communicated with said flow-directing chamber through said port means at the rear of the flow-directing chamber, arranged symmetrically to said plane and extending along the length of the air bar.

4,265,385

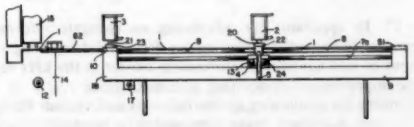
MANUAL STOCK FEEDER

Robert A. Hills, P.O. Box 152, Rincon, Ga. 31326

Filed Jul. 13, 1979, Ser. No. 57,393

Int. Cl.³ B21D *43/18*

U.S. Cl. 226—127 **12 Claims**



1. A stock feeder apparatus for feeding stock to a machine for processing said stock, including:

(a) A support means for aligning said stock for feeding said stock to said machine and for supporting said stock relative to said machine, said support means including a first end plate at the end of the support means closest to the machine and second end plate at the end of the support means furthest from the machine, and at least one cylindrical member rigidly affixed between said first end plate and said second end plate aligned with the direction of movement of said stock as said stock is being fed to said machine;

(b) a carriage in sliding communication with said cylindrical

member, said carriage further including a handle rigidly affixed to said carriage;

(c) a first stock engagement means for mechanically engaging said stock at a first starting point relative to said support means, said first stock engagement means being capable of being moved into engagement with said stock and disengaged from said stock, and said first stock engagement means being carried by said carriage;

(d) a second stock engagement means for mechanically engaging said stock at a second point relative to said support means, said second point being collinearly located with the path of said stock as said stock is fed into said machine, and located between said first starting point and said machine, and said second stock engagement means being capable of being moved into engagement with said stock and disengaged from said stock;

(e) a first stock engagement control means for alternatively moving said first stock engagement means into engagement with said stock and for moving said second stock engagement means into engagement with said stock, said first stock engagement control means being responsive to an actuator means for actuating said first stock engagement control means, and said actuator means being carried by said carriage; and

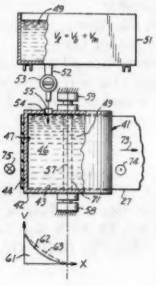
(f) a second stock engagement control means for disengaging both said first stock engagement and said second stock engagement means from said stock.

4,265,386

TORSIONAL FLUID DAMPER SYSTEM

Avner Levy, Irvine, and Irving Karsh, Costa Mesa, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jul. 2, 1979, Ser. No. 54,371
Int. Cl.[3] B65H *17/20*
U.S. Cl. 226—190 **24 Claims**



17. In apparatus for advancing an elongate information carrier with an information carrier drive and dampening vibrations of said advancing information carrier in the kHz region, the improvement comprising in combination:

means for containing an inertial mass and viscous fluid friction boundary layer comprising a rotatable container having an internal space bounded by a circumferential wall;

means for providing in said container an inertial mass and a viscous fluid friction boundary layer encompassing said inertial mass, comprising a viscous liquid extending through said internal space to said circumferential wall and forming both said inertial mass and said boundary layer as one continuous entity;

means for advancing said information carrier with said carrier drive; and

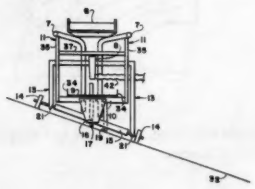
means coupled to said advancing information carrier for rotating said fluid container, boundary layer and inertial mass with said advancing information carrier and dampening vibrations of said advancing information carrier in the kHz region with said viscous liquid inertial mass and boundary layer.

4,265,387

APPARATUS FOR INSTALLING SHINGLES ONTO A ROOF

Earl Strouse, 16026 N. 67th Ave., Peoria, Ariz. 85345

Filed Nov. 26, 1979, Ser. No. 97,243
Int. Cl.[3] B27F *7/00*
U.S. Cl. 227—7 **5 Claims**



1. A cart-like apparatus for applying shingles to a roof comprising:

(a) a rigid framework having front, rear and upper portions and uphill and downhill side portions,

(b) a pair of rear wheels positioned at opposite extremities of an axle pivotably mounted adjacent its center to the lower rear portion of said framework, said axle being disposed substantially perpendicularly to said side portions,

(c) a storage compartment positioned adjacent the upper portion of said framework and adapted to hold flexible roofing shingles,

(d) handle means associated with said framework and disposed substanially above said rear wheels,

(e) a conduit guide adapted to receive and direct said shingles downwardly into proper position on a roof,

(f) a stabilizer wheel mounted adjacent the lower front portion of said framework, the plane of rotation of said wheel being substantially perpendicular to said pivotably mounted axle,

(g) an activator wheel positioned in opposed relationship to said stabilizer wheel, mounted so as to have a vertically adjustable axis of rotation, and adapted to roll upon a roof in non-slipping engagement therewith,

(h) spaced control means associated with said activator wheel and

(i) automatic fastener means associated with said framework in a manner adapted to undergo repetitive lifting and falling movement in response to said spaced control means, whereby fasteners are forced at spaced intervals into underlying shingles with each falling movement of said fastener means.

4,265,388

PROCESS FOR MANUFACTURE OF ASSEMBLED CAM SHAFT

Akio Takahashi, Toyota; Chiaki Tsumuki, Aichi; Hitoshi Nakamura, and Juro Ozaki, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 5, 1978, Ser. No. 939,857
Claims priority, application Japan, Sep. 8, 1977, 52/108174
Int. Cl.[3] B23K *39/225;* B23P *11/00*
U.S. Cl. 228—135 **9 Claims**

1. A method of making a cam-shaft assembly comprising

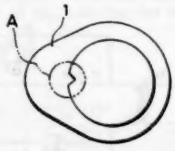
providing a shaft having an axially extending groove formed in its outer surface,

providing a cam having an opening of a diameter slightly greater than the diameter of the shaft and having an inwardly extending projection of a profile generally similar to the profile of the groove in the shaft, said projection

forming an interference fit with the groove when aligned therewith and assembled on the shaft,

aligning said projection with said groove and forcing said cam axially onto said shaft to a predetermined position on the shaft,

said cam gripping said shaft in said position by virtue of the



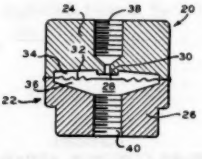
interference of the projection in the groove to restrain the cam against movement both axial and circumferentially relative to the shaft and said projection spacing portions of the surface of the opening in the cam from the surface of the shaft at said position to provide a clearance space, and reducing said clearance space thereby further securing the cam to the shaft at said position.

4,265,389

METHOD OF WELDING A DIAPHRAGM ASSEMBLY

Michael Mastromatteo, 53B Ridge Rd., Valley Cottage, N.Y. 10989

Filed Oct. 30, 1978, Ser. No. 956,229
Int. Cl.³ B23K *15/00, 9/00*
U.S. Cl. 228—219 **3 Claims**



1. The method of welding a diaphragm assembly including removing or supplying gases in a welding chamber, comprising:

(a) providing a housing having at least two sections each having at least one portal opening;

(b) providing a diaphragm between the two sections; the two sections defining a cavity with the housing; the diaphragm dividing the housing cavity into two chambers;

(c) disposing the diaphragm and housings into a welding chamber;

(d) removing or supplying gases to the welding chamber at a rate sufficient to normally create an undesired unbalance pressure in said housing chambers;

(e) welding the diaphragm and housings together; and

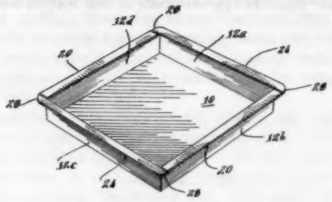
(f) preventing said undesired unbalance of pressure by maintaining predetermined pressure relationships within and between the housing chambers during the removal or supply of gases by controlling the flow of gas through the respective portal openings to thereby retain the diaphragm in a predetermined position with reference to the housing before and after welding.

4,265,390

PAPERBOARD TRAY

Rudolph A. Faller, Edina, and William M. Tolaas, Shoreview, both of Minn., assignors to Champion International Corporation, Stamford, Conn.

Filed Jan. 16, 1978, Ser. No. 869,655
Int. Cl.³ B65D *5/28*
U.S. Cl. 229—30 **8 Claims**



1. A tray, constructed of a material which is stiffer and more resistant to bending in one direction than in the direction transverse to said one direction, comprising:

a bottom wall panel;

a plurality of generally upright side wall panels extending from the edges of the bottom wall panel; and

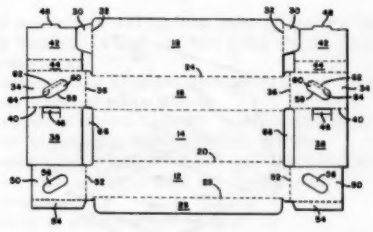
a plurality of flange panels lying in the same plane, each extending from one edge of said side wall panels and being connected thereto along a fold line which is scored as a function of the bending resistance of the panel material at the fold line, the fold lines in said one direction being selectively more heavily scored than in the transverse direction.

4,265,391

NESTABLE BOX AND BOX BLANK

Larry Zornes, Cincinnati; Lloyd J. Farley, Batavia, and Edward J. Powlenko, Cincinnati, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Aug. 30, 1979, Ser. No. 70,942
Int. Cl.³ B65D *5/24*
U.S. Cl. 229—34 R **5 Claims**



1. In a box blank including rear, bottom and front walls hingedly interconnected and end panels connected to said walls and adapted to interleave to form end walls, the improvement comprising:

means defining notches at opposite ends of said bottom wall whereby said bottom wall is shorter in length than said front and rear walls,

a top wall hingedly connected along a longitudinal edge thereof to a longitudinal edge of said rear wall,

said end panels include first end panels hingedly connected to opposite ends of said rear wall and second end panels hingedly connected to said first end panels and adapted to overlie said bottom wall in a box constructed from said blank, means defining notches in said second panels adjacent their connections to said first panels, third ends panels hingedly connected to said first end panels opposite said second end panels, said third end panels carrying tabs

adapted to engage said notches in said second end panels, and fourth end panels hingedly connected to opposite ends of said front walls,

said front and rear walls are hingedly connected to opposite sides of said bottom wall and have notches formed therein at corners thereof conincident with corners of said bottom wall, and

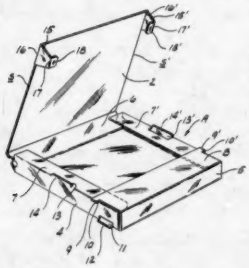
said second end panels have notches formed therein in edges thereof adjacent opposite ends of said bottom wall.

4,265,392
Patent Not Issued For This Number

4,265,393
BOX CONSTRUCTION

Edgar L. Orchard, St. Louis County, Mo., assignor to Orco Sales Co. Inc., St. Louis, Mo.

Filed Oct. 10, 1979, Ser. No. 83,237
Int. Cl.[3] B65D *5/10*
U.S. Cl. 229—40 **10 Claims**

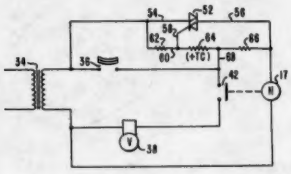


1. A box construction having a bottom wall, parallel side walls, front and back walls, a top wall closure swingable about its rearward end upon said rear wall for movement between raised, box-open and lowered, box-closed condition, latch tabs extending downwardly from said top wall when in closed condition, keeper-forming means provided in said side walls for accepting said latch tabs when the box is in closed condition, and stop means projecting laterally of said box immediately rearwardly of said latch tabs when the box is in closed condition for detent relationship with the rearward edges of said latch tabs to inhibit accidental opening of said box.

4,265,394
FLUE DAMPER CONTROL SYSTEM

George W. Nagel, Forest Hills Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 28, 1979, Ser. No. 79,679
Int. Cl.[3] F23N *3/00*; F23L *11/00*; G05D *23/00*
U.S. Cl. 236—1 G **5 Claims**



1. In a flue damper control system of the type which includes electrically energized damper motive means required to be fully energized to hold the damper plate in a closed position in the flue, and including interlock means provided to normally permit fuel flow only when said damper plate is in an open position, first switch means provided to control energization of said damper motive means, and a circuit including a thermostatic switch operable in accordance with demand for heat, the improvement comprising:

said first switch means comprises a semiconductor switch in the damper motive means circuit; and

a trigger circuit for said semiconductor switch including a thermistor responsive to flue temperatures upstream of said damper plate, said trigger circuit turning on said semiconductor switch to fully energize said damper motive means only when said flue temperature is below a predetermined value and there is no demand for heat as indicated by the positions of said thermostatic switch.

4,265,395
TEMPERATURE CONTROL APPARATUS FOR AN AUTOMOBILE AIR CONDITIONER

Seizi Sumikawa, Namekawa, and Takesi Harada, Higashimatsuyama, both of Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1979, Ser. No. 96,201
Claims priority, application Japan, Nov. 20, 1978, 53-142172
Int. Cl.[3] G05D *23/00*; G06F *7/38*
U.S. Cl. 236—13 **10 Claims**

1. A temperature control apparatus for controlling air temperature in an air conditioner for an automobile including:

a temperature setting circuit for generating a signal indicative of a temperature set by manual operation, said temperature setting circuit having a manual operating means for setting air temperature;

a temperature detecting circuit for generating a signal indicative of an actual air temperature in the air conditioner, said temperature detecting circuit being arranged so as to detect the air temperature;

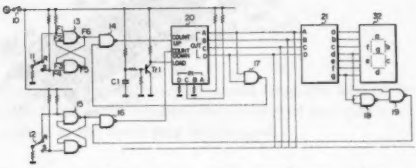
a control amplifier for comparing the signal from said temperature setting circuit with the signal from said temperature detecting circuit and generating a signal according to the result of the comparison; and

an actuater for opening or closing an air mixing door, said

actuater being operated according to the signal from said control amplifier, said air mixing door being arranged so as to control air temperature by adjusting the mixing ratio of a heated air flow rate with a cooled air flow rate,

wherein an improvement is characterized in that said temperature setting circuit comprises

two self-return type push button switches operating as said manual operating means, one of said switches for elevating and the other of said switches for lowering the set temperature,



an up-down counter for counting signals from said switches and feeding out a digital signal, and

a digital-analog converting circuit for carrying out a digital-analog conversion of the output of said up-down counter to generate a signal to be put into said control amplifier,

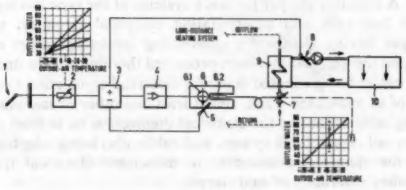
said temperature control apparatus further comprises an indicator means for receiving said output of said up-down counter and digitally and visually displaying said set temperature.

4,265,396

CONTROL SYSTEM FOR CENTRAL HEATING

Raimo Vaananen, Tampere, Finland, assignor to Lonnstrom Oy, Rauma, Finland

Filed Nov. 21, 1978, Ser. No. 962,606
Claims priority, application Finland, Nov. 21, 1977, 773511
Int. Cl.[3] G05D *15/00*
U.S. Cl. 236—68 R **1 Claim**



1. A control system for central heating comprising:

a heating medium flow rate control valve;

a temperature responsive measuring bulb operatively connected to said control valve by a capillary tube for effecting self-powered control of valve position as a function of bulb temperature;

an outdoor temperature sensor for producing a feedback signal representative of outdoor temperature;

a bulb temperature sensor for producing a feedback signal representative of valve position;

electronic central control means having bulb heating means, including a power transistor as an active component in the circuitry of the central control means and as a heat source, said heating means detachably holding said bulb, said bulb and capillary tube being so constructed so that said bulb can be removed from said heating means and repositioned to measure the temperature of the heating medium downstream of said valve and control said valve independently of said control means

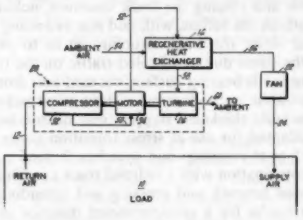
said central control means being operatively connected to said outdoor temperature sensor and to said bulb temperature sensor to accurately power said bulb heating means responsive to said outdoor temperature signal and said valve position feedback signal when said bulb is positioned in said bulb heating means.

4,265,397

COMBINED FRESH AIR REGENERATOR AND AIR CYCLE HEAT PUMP

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 28, 1979, Ser. No. 52,886
Int. Cl.[3] G05D *23/00*
U.S. Cl. 237—2 B **2 Claims**



1. A regenerative air cycle heat pump system for supplying heated fresh air to a load, said heat pump system comprising:

a compressor;

a turbo-expander mechanically connected to said compressor to provide power thereto;

an electric motor mechanically connected to said compressor for providing additional power thereto;

means for supplying stale air from said load to said compressor where said load air is increased in temperature and pressure;

a source of ambient air;

a regenerative heat exchanger connecting, through heat transfer surfaces within said heat exchanger, the source of ambient air without prior expansion thereof, with the load air compressed by said compressor, said load air rejecting some of its heat to said ambient air in said heat exchanger;

means for passing said compressed load air through said electric motor prior to supplying said load air to said regenerative heat exchanger, said load air simultaneously cooling said motor and recovering the heat of motor inefficiencies;

means for supplying said heated ambient air from said regenerative heat exchanger to said load;

means for supplying said compressed load air from said regenerative heat exchanger to said turbo-expander where said load air is expanded and cooled substantially below ambient temperature; and

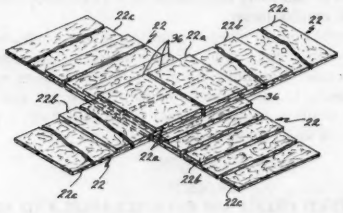
means for rejecting said expanded load air from said turbo-expander to ambient.

4,265,398

VARIABLE THICKNESS MAT FOR STRESS TRANSITION ZONES OF RAILROAD TRACK CROSSINGS, SWITCHES, AND THE LIKE, AND METHOD OF USE

Robert W. Luebke, Hudson, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Nov. 9, 1979, Ser. No. 92,709
Int. Cl.[3] B32B *5/06, 5/26;* E01B *3/44*
U.S. Cl. 238—1 **34 Claims**



1. A method of providing for the spreading of stress from wheeled traffic on a railroad track structure including a track crossing, switch or the like, over an increased area, comprising the steps of placing a variable thickness, stepped fabric mat on an earthen support surface along the stress transition zones of the track crossing, switch or the like, placing a layer of ballast on said mat and placing the track structure including the ties and the rails on the ballast, with said mat extending sufficiently lengthwise along the track structure so as to progressively transmit the stress due to wheeled traffic on the tracks to the underlying earth bearing surface via said mat from the minimum stress zone to the maximum stress zone and vice versa.

7. A variable thickness stepped mat of non-woven fabric material adapted for use at stress transition zones of railroad track, such as at crossings and switches thereof.

23. In combination with a railroad track crossing, a resilient mat disposed beneath said crossing and extending therefrom along the tracks for a predetermined distance to provide a resilient base, for the stress transition zones of the track to thereby progressively absorb the stress forces from a train passing over said crossing, a layer of ballast disposed on top of said mat and supporting thereon the ties of the railroad track, said mat comprising a multi-layer fabric member of stepped configuration, with the thicknest portion thereof being disposed immediately beneath the crossing and with the thinner portions thereof extending outwardly away from said thickest portion and in general alignment with the respective entry and/or exit track portions of the crossing.

4,265,399

SNOW CHAIN

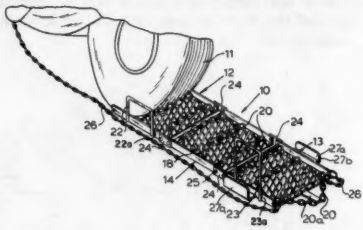
Joseph C. Covington, 7000 S. Wasbash, Chicago, Ill. 60637

Filed Aug. 23, 1979, Ser. No. 69,176
Int. Cl.[3] E01B *23/00*
U.S. Cl. 238—14 **5 Claims**

1. A heavy duty anti-skid device of the type that can be folded into a compact unit for storage comprising:

a series of three open framed sections each being parallel-sided and comprised of L-shaped angled members having upright legs and inwardly extending legs with a mesh type member having four edges secured in assembly with the inwardly extending legs of the L-shaped angled members,

links pivotally secured at opposite ends to said upright legs disposed at opposite sides of said sections providing means for joining said sections together and providing means for enabling said sections to be folded at the areas of said links and positioned in stacked relation for ready transport so the open framed sections can be unfolded and positioned in end-to-end linear relation for coaction with a vehicle wheel to assist in extraction of the wheel from an immobilized position and with said open-framed sections being pivotal at their connections with said links for disposition of the sections in superimposed folded relatively flat relation with respect to one another for ease of storage, the three sections including a middle open frame section and a pair of end open frame sections at opposite ends of the



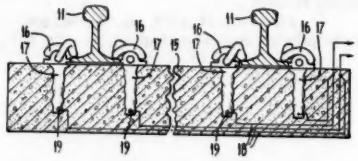
middle open frame section, an upright U-shaped handle on each of said end sections and said handles being so connected to the associated end section to allow them to be disposed in side-by-side relation when said end sections are in stacked relation to said middle section to facilitate transport of said sections.

4,265,400

CONCRETE SLEEPER FOR TRACK CIRCUITRY

John V. W. Jordon, Perth, Australia, assignor to Humes Limited, Melbourne and Hamersley Iron Pty. Limited, Perth, both of, Australia

Filed Apr. 6, 1979, Ser. No. 30,611
Int. Cl.[3] E01B *3/32;* H02G *3/26*
U.S. Cl. 238—14.4 **8 Claims**



1. A concrete sleeper for track systems of the type having at least two rails and incorporating electrical circuitry, said sleeper having electrically conducting insulating cables embedded therein, and therefore protected thereby, at least one of said cables being adapted in use for electrical connection to one rail of an associated track, and at least one other of said cables being adapted in use for electrical connection to at least one other rail of said track system, said cables also being adapted in use for electrical connection to associated electrical track circuitry externally of said sleeper.

4,265,401

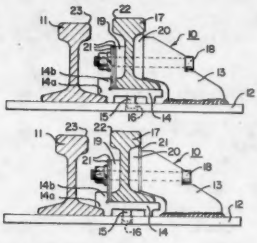
ADJUSTABLE GUARD RAIL STRUCTURES

Bertie Jackson, Cincinnati, Ohio, assignor to L. B. Foster Company, Pittsburgh, Pa.

Filed Mar. 9, 1979, Ser. No. 18,885
Int. Cl.[3] E01B *5/18*
U.S. Cl. 238—17 **6 Claims**

1. An adjustable guard rail assembly for use with a running rail comprising a plurality of spaced base plates each having one end extending beneath the running rail, brace means fixed to each base plate adjacent the other end, a guard rail supported on said spaced base plates and abutting said braces,

fastening means extending through said brace and guard rail and interchangeable spacer means on said fastening means



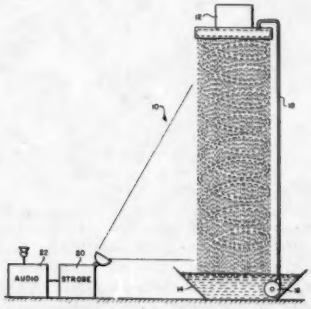
interchangeable on said fastening means from one side of the guard rail to the other whereby the position of said guard rail with respect to the brace may be changed.

4,265,402

STROBED LIQUID DISPLAY DEVICE AND HEAD THEREFOR

Wen-Ying Tsai, 154 Hester St., New York, N.Y. 10013

Filed Jul. 13, 1979, Ser. No. 57,340
Int. Cl.[3] F21P *7/00*
U.S. Cl. 239—20 **19 Claims**



1. A head for incorporation in a strobed liquid display comprising:

a housing defining a chamber, said housing having an inlet opening therein suitable for connection to a liquid supply for filling said chamber with liquid, said housing including a top wall having a vent, a substantially horizontally oriented bottom wall having a plurality of apertures spaced from and distributed about the center thereof for accommodating the outflow of liquid droplets from said chamber, and a side wall extending between said top and bottom walls; and

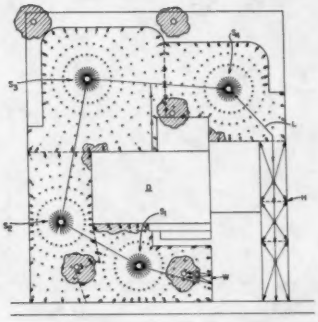
vibrating means rigidly connected to said housing for imparting a periodic wobble thereto for dispensing said droplets from said apertures in sequential fashion with substantially uniform spacing between successive droplets dispensed through each aperture, whereby said dispensed droplets substantially define a helix.

4,265,403

CONTROLLED IRRIGATION SYSTEM FOR A PREDETERMINED AREA

Ralph A. Bonetti, Littleton, Colo., assignor to Advanced Products Development Corporation, Littleton, Colo.

Filed May 9, 1979, Ser. No. 37,388
Int. Cl.[3] A01G *25/16;* **B05B** *3/04, 15/04*
U.S. Cl. 239—66 **30 Claims**



1. A sprinkler system comprising in combination:

a source of water supply under pressure and a common water supply line connected thereto;

a plurality of sprinkler heads at spaced intervals along said water supply line, each sprinkler head having timer control valve means interposed between an inlet port adapted to receive water from said water supply line and a discharge port connected to said sprinkler head, said control valve means being responsive to rotation of said sprinkler head to be movable between a first position diverting water from said water supply line through said inlet and discharge ports and a second position closing said discharge port and permitting water to flow through said supply line to each next sprinkler head in succession;

a rotatable nozzle assembly in each sprinkler head communicating with said discharge port; and

water operated drive means in each sprinkler head responsive to the flow of water under pressure through said discharge port to continuously rotate said sprinkler head.

4,265,404

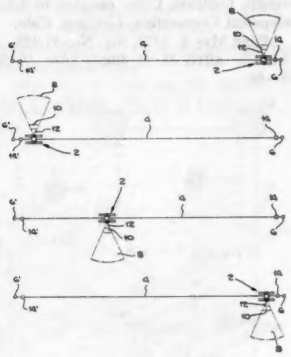
SUPPORT STRUCTURE FOR TRAVELING SPRINKLER

Edwin J. Hunter, Rancho Santa Fe, Calif., assignor to The Toro Company, San Marcos, Calif.

Division of Ser. No. 827,787, Oct. 13, 1977, Pat. No. 4,204,642.
This application Dec. 19, 1979, Ser. No. 105,398
Int. Cl.[3] A01G *25/09*
U.S. Cl. 239—186 **9 Claims**

1. In a traveling sprinkler system having a directional sprinkler means, a base for said sprinkler means, means for propelling said base in at least two directions over a field, and means for supplying irrigation water to said sprinkler means, the improvement comprising a tubular support pedestal rotatably

mounted to said base and carrying said sprinkler means, and means for rotating said pedestal only in connection with a



change in the direction of travel of said base to alter the sprinkler direction.

4,265,405

SPRINKLER NOZZLE

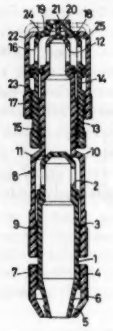
Tosio Takagi, 316-2, Wakazonominami-machi, Kokuraminami-ku, Kitakyushu-shi, Fukuoka-ken, Japan

Filed Oct. 1, 1979, Ser. No. 81,081

Claims priority, application Japan, Oct. 9, 1978, 53-138791[U]; Mar. 2, 1979, 54-24644

Int. Cl.³ B05B *1/16, 1/32*

U.S. Cl. 239—440 **2 Claims**



1. A sprinkler nozzle comprising:

a base tube having a closed tip and a lower end adapted to receive a hose,

a tubular nozzle body having a closed tip and screwed on said base tube and communicating with said base tube, said nozzle body being formed with an inside shoulder which engages the closed tip of said base tube to serve as a first valve,

an inner tube screwed on said nozzle body and communicating with said nozzle body, said inner tube being formed with an inside shoulder which engages said nozzle body to serve as a second valve, said inner tube having an open end which cooperates with a projection extending from the top of said nozzle body to serve as a nozzle opening, and

an outer tube screwed on said inner tube and communicating with said inner tube, said outer tube having an open top edge which engages said inner tube to serve as a third valve.

4,265,406

COMMINUTION PROCESS

Derek A. Palgrave, Doncaster; Frederick A. Waite, Farnham Common; James D. Birchall, Chester, all of England; John Cooper, and James A. Enever, both of Kilmarnock, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed May 31, 1979, Ser. No. 44,161

Claims priority, application United Kingdom, Mar. 30, 1979, 11207/79

Int. Cl.³ B02C *19/00*

U.S. Cl. 241—16 **11 Claims**

1. A process for the preparation of a stable suspension of a fine crystalline substance suspended in a saturated solution thereof comprising comminuting the substance by grinding in the presence of a saturated solution of the substance in a liquid in which the substance has a solubility greater than 1% by weight, the mixture of said solution and said substance being in fluid condition with the substance being a separate solid phase during grinding, and said solution having dissolved therein an additive which is a crystal growth inhibitor for the substance whereby crystal growth is inhibited at both existing crystal surfaces and new crystal surfaces created by the breaking down of relatively coarse particles.

4,265,407

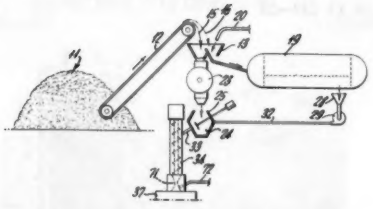
METHOD OF PRODUCING A COAL-WATER SLURRY OF PREDETERMINED CONSISTENCY

Richard V. Kessler, and Roger J. Corbeels, both of Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 13, 1979, Ser. No. 57,222

Int. Cl.³ B02C *17/00*

U.S. Cl. 241—21 **4 Claims**



1. Efficient method of preparing a coal and water slurry having a predetermined thickness from mined coal and a predetermined total quantity of water, comprising the steps of,

feeding less of said mined coal than required for said slurry into a ballmill,

introducing said total quantity of water required for said slurry into said ballmill to produce a relatively thin powdered coal slurry,

grinding the remaining quantity of said mined coal required for said slurry in a dry grinder to produce dry powdered coal, and mixing said thin slurry with said dry powdered coal to produce said coal and water slurry having a predetermined thickness.

4,265,408

SORTING MACHINE

Peter Voelskow, Kiefernweg 18, 6550 Bad Kreuznach, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,364

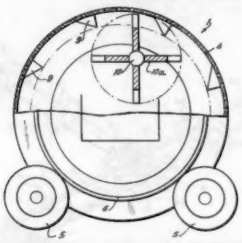
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1978, 2839604

Int. Cl.³ B02C *17/02*

U.S. Cl. 241—87 **12 Claims**

1. A sorting machine, particularly for refuse particles comprising a rotatable screen drum having a diameter within the

range of about 1:1 to 1:2 relative to its axial length; a plurality of axially spaced annular sets of strip shaped baffles arranged in and rotatable with said drum, and having inwardly directed ripping portions; a plurality of axially spaced annular baffles in said drum and each having an inner diameter smaller than the inner diameter of the drum; means for rotating said drum at an



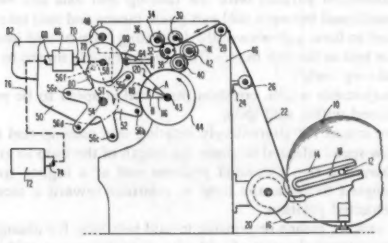
angular velocity which is smaller by between about **20-50%** than the velocity at which the drum contents are pressed by centrifugal force against the circumferential drum wall; and at least one turnable processing shaft extending through said drum parallel to and laterally offset from the axis of rotation of said drum.

4,265,409

WEB REWINDER TURRET SWING CONTROL

Jon N. Cox, Oakland, Me., and Balbir Singh, Media, Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Nov. 13, 1979, Ser. No. 93,529
Int. Cl.³ B65H *19/20*
U.S. Cl. 242—56 A **17 Claims**



1. An improved automatic web rewinding machine having a pivotally mounted frame, a turret mounted for rotation within the frame, said turret including a plurality of rotatable mandrel assemblies, means including a rotating cam for controlling the angular position of the frame, and index means for intermittently rotating the turret wherein the improvement comprises means for intermittently rotating the cam so that a major portion of the cam rotation coincides with the rotation of the turret.

4,265,410

MACHINE FOR WINDING STRIP MATERIAL

William J. Fanning, Glen Ellyn, Ill., assignor to Western Electric Company, Inc., New York, N.Y.

Division of Ser. No. 974,153, Dec. 28, 1978, Pat. No. 4,229,865.
This application Apr. 21, 1980, Ser. No. 142,590
Int. Cl.³ B65H *39/16, 17/02*
U.S. Cl. 242—56.1 **17 Claims**

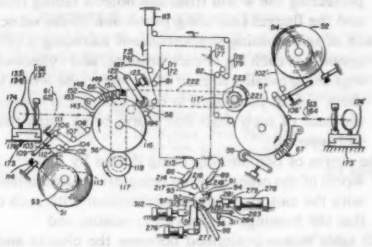
1. A winding apparatus, which includes:

a pair of physically displaced, separate means for applying advancing forces to a pair of strips of material;

a mandrel for simultaneously winding the pair of strips with one strip overlaying the other;

means for guiding said strips from said force applying means to the mandrel;

means for rotating the mandrel to apply forces to said strips which take up the strips; and



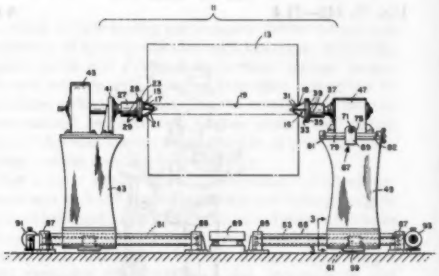
means for setting the separate force applying means to advance the strips at different rates of advance to compensate for the differences in diameters of the successive convolutions of the pair of wound strips.

4,265,411

PAPER ROLL BACKSTAND

Ambrozy J. Fasolak, 124 W. Venango St., Philadelphia, Pa. 19140

Filed Jul. 18, 1979, Ser. No. 58,500
Int. Cl.³ B65H *19/12*
U.S. Cl. 242—58.6 **3 Claims**



1. A backstand for unwinding all or part of a roll of paper, comprising

a pair of chucks facing each other and adapted to enter opposite ends of a core of a roll of paper,

a housing for each of the chucks,

chuck support means for rotatably supporting each of said chucks,

housing support means slideably supporting each housing for movement toward and away from each other,

each of said housings having a pair of legs with a space in between,

power means for moving said housings toward and away from each other so that said chucks spread apart to receive a roll of paper and move toward each other to engage the ends of the core of the roll and rotatably support the roll,

said power means including a rotatable worm mounted beneath each housing in the opening between the housing legs,

a support plate connected between the legs of each housing,

a worm nut mounted on top of each support plate and engaging its associated worm, and

a guard mounted over each worm and passing through the opening between the housing legs to protect the worm

from damage from objects which are dropped, such as rolls of paper;

brake means mounted on one of said housings and connected to its chuck for braking the rotational speed of said chuck and any paper roll it may be supporting,

said guard being a channel-shaped member having a web connecting a pair of depending flanges with the web protecting the worm from any objects falling from above and the flanges providing protection to the sides;

each of said housing support means including a cylindrical opening in each leg of each housing, said cylindrical openings being parallel to each other and to the worm between them, a shaft positioned in each cylindrical opening, with the ends of each shaft and worm being supported by an end support;

the worm of one housing being driven by a motor and the worm of the other housing being driven by another motor with the motors being in synchronism with each other so that the housings are moved in unison; and

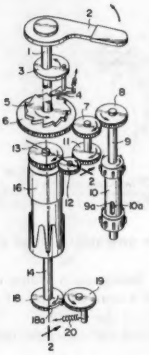
lift table means positioned between the chucks and below the level of the chucks and between said worms for lifting the paper roll into position to be engaged and rotatably supported by said chucks.

4,265,412

FILM WIND-UP DEVICE FOR A CAMERA

Motoyoshi Furusawa, Shobumachi; Motohiko Horio, Iwatsuki; Shyuichi Togashi, Tokyo, and Akio Ohmiya, Omiya, all of Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Sep. 11, 1979, Ser. No. 74,309
Claims priority, application Japan, Sep. 13, 1978, 53-112842
Int. Cl.³ G03B *1/06*
U.S. Cl. 242—71.4 **5 Claims**



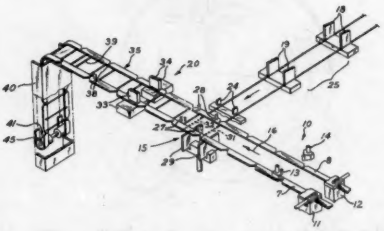
1. A film wind-up device for a photographic camera comprising a wind up shaft having separate upper and lower shaft portions, a wind up lever operatively connected to said upper shaft portion for rotating said upper shaft portion in a first direction to wind up film in the camera, a take up spool gear secured to said lower shaft, gear train means for drivingly connecting said upper shaft portion to said take up spool gear, a take up spool rotatably mounted on said lower shaft portion, friction means for frictionally coupling said spool to said spool gear to permit respective movement therebetween; and a film drive sprocket directly driven by said gear train whereby the drive sprocket is driven through a predetermined angle of rotation on operation of the wind up lever while the take up spool will rotate with a decreasing angle of rotation as the diameter of the film convolution on the spool increases.

4,265,413

TAKE-UP APPARATUS FOR ELECTRICAL PHASE INSULATOR FABRICATING EQUIPMENT

Richard D. Burns, and Albert J. Wesseldyk, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Filed Feb. 27, 1980, Ser. No. 125,123
Int. Cl.³ B65H *23/16*
U.S. Cl. 242—75.3 **6 Claims**



1. In equipment for fabricating electrical phase insulators for dynamoelectic machines, the equipment having exit guide means for supplying a continuous belt of preformed phase insulators lying in a predetermined feed plane having a longitudinal feed axis, said phase insulators including spaced apart parallel insulator strips moving at substantially equal relative feed rates, the insulator strips being interconnected by cross connector strips to form substantially rectangular windows; take-up apparatus therefor comprising:

a take-up reel spaced from said exit guide means and having an axis of rotation substantially parallel with said feed plane and substantially orthogonal to said longitudinal feed axis;

a guide roll having a belt bearing surface with a longitudinal dimension parallel with the take-up reel axis and being positioned between said exit guide means and said take-up reel to form a downwardly depending loop of said insulator belt as the belt moves from the exit guide means to the take-up reel;

an adjustable width, constant mass roll adapted to be positioned within said loop;

drive means for alternatively rotating said take-up reel at a low speed adapted to cause the length of the loop to grow toward a first extended position and at a higher speed adapted to cause the loop to contract toward a second retracted position;

and sensing means responsive to said belt loop for changing the rotational speed of said take-up reel between said low and high speeds when the loop reaches said first and second positions.

4,265,414

APPARATUS FOR WINDING FIRE HOSE

Michael D. Spradling, 860 Montana, Marysville, Mich. 48040

Filed Jun. 19, 1980, Ser. No. 161,212
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—86.2 **5 Claims**

1. A collapsible apparatus for winding a hose, said apparatus comprising:

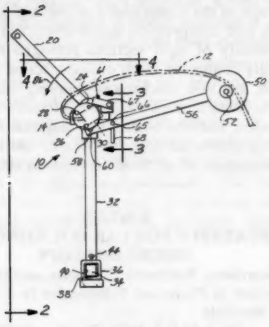
a vertically disposed disc member supported for rotation about a horizontal axis;

means for rotating said disc member about said horizontal axis;

a pair of spaced tines extending laterally from said disc member and being eccentrically spaced from said horizontal axis, said tines being spaced to receive said hose thereinbetween and align a portion of said hose with said horizontal axis; and

a spool guide supported for rotation about a second horizontal axis radially spaced from said horizontal axis and coop-

erating with said tines to guide said hose as said hose is spirally wound about said tines as said disc member is



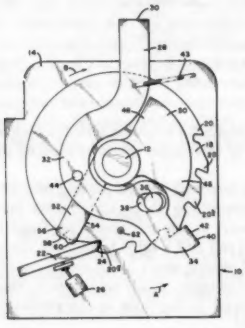
rotated, said spool guide being vertically displaced above said first horizontal axis.

4,265,415

EMERGENCY RELEASE DEVICE FOR SEAT BELT RETRACTOR

Terry R. Harrell, and Robert C. Pfeiffer, both of Rochester, Mich., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Apr. 16, 1979, Ser. No. 30,193
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **12 Claims**



1. In a vehicle seat belt retractor comprising a shaft rotatable in the protraction and retraction directions; seat belt webbing associated with said shaft; locking means actuable to prevent rotation of said shaft in said protraction direction, said locking means comprising a ratchet wheel, a pawl adapted to lockingly engage said ratchet wheel and a sensor for moving said pawl into locking engagement with said ratchet wheel, said sensor being sensitive to an orientation of said vehicle other than the normal upright orientation of said vehicle, the improvement comprising:

actuator means associated with said retractor and movable from a first position to a second position and from said second position to a third position;

contact means associated with said actuator means and having a ratchet wheel engaging surface, said contact means being movable into contact with said ratchet wheel upon motion of said actuator means from said first to second positions of said actuator means, said contact means operable to move said ratchet wheel in said retraction direction upon movement of said actuator means to said third position of said actuator means; and

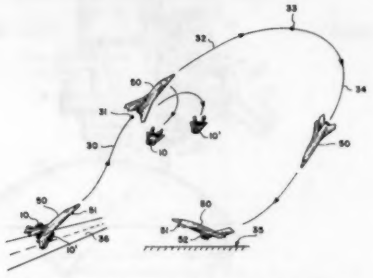
pawl release means movable from a disengagement position into engagement with said pawl and operable to move said pawl out of engagement with said ratchet wheel upon movement of said ratchet wheel in said retraction direction in response to said movement of said contact means, whereby said shaft is free to rotate in said protraction direction to pay out said seat belt webbing.

4,265,416

ORBITER/LAUNCH SYSTEM

Liam R. Jackson; John P. Weidner, both of Newport News; William J. Small, Seaford, and James A. Martin, Gloucester, all of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 30, 1978, Ser. No. 910,794
Int. Cl.³ B64C *37/02*; B64D *5/00*
U.S. Cl. 244—2 **5 Claims**



1. An orbiter vehicle launching system comprising in combination:

(a) an orbiter vehicle having aerodynamic orbiter wings; and

(b) a plurality of booster vehicles each having aerodynamic booster wings and powered by turbojet engine means, each said booster vehicle being releasably connected to said orbiter vehicle for propelling the combination thereof during takeoff and ascent to staging altitude and speed, each said booster vehicle being capable of powered post-staging descent and horizontal landing;

each said booster vehicle further comprising sufficient aluminum heat sink structure supporting said turbojet engine means therein and having sufficient aerodynamic surfaces to enable controlled powered flight of each said booster vehicle, each said booster vehicle further comprising a pylon extending from said heat sink structure to said orbiter vehicle, and each said pylon being attached to said orbiter vehicle with explosive bolts.

4,265,417

HYDRAULIC NOSE LANDING GEAR STEERING ACTUATOR FOR AN AIRPLANE

John Watts, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

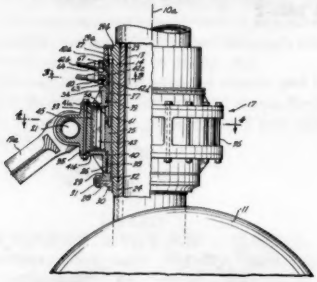
Filed Feb. 26, 1979, Ser. No. 15,119
Int. Cl.³ B64C *25/50*
U.S. Cl. 244—50 **5 Claims**

1. In an aircraft nose landing gear assembly having a landing wheel journalled to a shock strut, said shock strut including telescoping inner and outer shock strut cylinders and shock absorber means contained therein, said outer shock strut cylinder being nonrotatable and said inner shock strut cylinder being rotatable about its longitudinal axis within said outer strut cylinder, said landing wheel being connected to the lower end of said inner shock strut cylinder, a steering actuator comprising:

a stator ring coaxially affixed about said outer shock strut cylinder and a rotor ring coaxially engaged about said

stator ring for relative rotational motion, said stator ring having at least one stator vane projecting radially outwardly and said rotor ring having at least one rotor vane projecting radially inwardly, said rotor vane and said stator vane slidably abutting respectively said stator ring and said rotor ring, means sealably connecting said stator ring and said rotor ring to form pressure chambers separated by said vanes into which hydraulic fluid may be selectively pumped to rotate said rotor ring about said stator ring, said stator ring including an integral tubular extension portion having a cylindrical outer surface;

a tubular hydraulic manifold affixed about said outer shock strut cylinder adjacent said integral extension portion of said stator ring, said manifold including an annular portion having a cylindrical inner surface sized to snugly enclose said cylindrical outer surface of said extension portion of



said stator ring in sealing relationship, said manifold including a pair of axially spaced hydraulic feed galleries recessed into and extending circumferentially about said cylindrical inner surface of said annular portion of said manifold, said stator ring further including internal hydraulic feed lines opening on said cylindrical outer surface of said extension portion of said stator ring in alignment with said feed galleries of said manifold and connecting said feed galleries in fluid communication with said pressure chambers, said manifold further including a pair of external hydraulic ports in communication with said feed galleries for connection to conventional hydraulic supply and return lines; and,

flexible torsion link means operably connecting said rotor ring to said inner shock strut cylinder for transmitting steering torque from said rotor ring to said inner shock strut cylinder and landing wheel.

4,265,418

ELONGATED INFLATABLE STRUCTURES FOR FLYING DEVICE BODIES

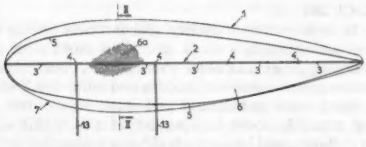
Michel Eymard, Toulouse, France, assignor to ZODIAC, Saint Cloud, France

Filed May 9, 1979, Ser. No. 37,920

Claims priority, application France, May 11, 1978, 78 14093

Int. Cl.³ B64B *1/58, 1/02*

U.S. Cl. 244—125 **9 Claims**



1. An elongated inflatable structure forming the body of a flying device such as a balloon or airship, comprising: an inflatable flexible envelope; a central axial compression means surrounded by said inflatable envelope; a plurality of uniformly spaced traction means; connected to said envelope: and a plurality of flexible mechanical coupling means interposed between each of the compression means and each of the traction means, said compression means comprises a beam formed from a plurality of rigid sections arranged end to end and articulatingly connected, each of said traction means comprising a beam, and said mechanical coupling means comprising diagonal mechanical networks, said inflatable envelope, compression beam, traction beams and diagonal mechanical networks being connected together so that the inflation of said envelope maintains all of these elements in shape.

4,265,419

APPARATUS FOR CAR COUNTING AND DISCRIMINATION

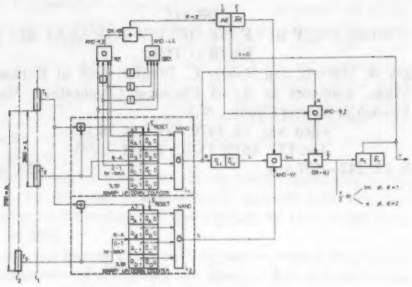
Ionel R. Scorteanu, Bucharest, Romania, assignor to Institutul De Cercetart Si Proiectari Tehnologice In Transporturi, Bucharest, Romania

Filed Apr. 4, 1979, Ser. No. 27,048

Claims priority, application Romania, May 10, 1978, 93970

Int. Cl.³ G61L *25/02*

U.S. Cl. 246—247 **8 Claims**



1. An apparatus for counting and discriminating railway cars irrespective of their type, speed or running direction comprising:

means for detecting an axle passing thereby along a two rail track comprising three transducers including a pair of transducers at one rail and spaced apart 2600 mm along said one rail and a third transducer disposed at the other rail and spaced apart 3700 mm from the furthest transducer of the pair, said transducers producing an electrical pulse signal in response to the passing thereby of a car axle; and

circuit means for processing the signals from the three transducers to effect the counting of railway cars passing thereby during use.

4,265,420

CLIP FOR FIXING AN ELECTRIC CABLE TO A SUPPORT STRUCTURE

Mathew McCormick, East Didsbury, England, assignor to Bowthorpe-Hellermann Limited, Crawley, England

Filed Oct. 22, 1979, Ser. No. 87,210

Claims priority, application United Kingdom, Nov. 27, 1978, 46109/78

Int. Cl.³ F16L *5/00*

U.S. Cl. 248—56 **3 Claims**

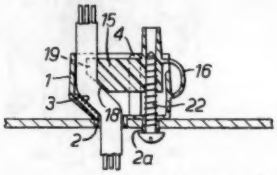
1. A clip for securing an electrical cable to a support panel containing a pair of adjacent openings, comprising

(a) a body member (1) the upper portion of which contains a recess defining a chamber, the bottom wall of said chamber containing first and second openings (2, 2*a*) aligned with the support panel openings, respectively, said first body member opening and the corresponding panel opening being adapted to receive the cable, a portion of the

chamber bottom wall having an upwardly inclined surface (3) adjacent said first opening;

(b) a clamping member (15) arranged within said body chamber, said clamping member containing a vertical bore (20) aligned with said second body member opening, the lower surface of said clamping member including a clamping surface (18) opposite said inclined surface, one side surface of said clamping member adjacent said clamping surface containing a vertical groove (19) having in horizontal cross-section a tapered configuration, said clamping member one side surface being adjacent and spaced from the adjacent chamber side wall; and

(c) a vertical screw (22) having at its lower end a head portion, said screw extending upwardly through said



second opening and having a threaded portion threadably connected within said clamping member bore, whereby when the cable extends upwardly through said first body member opening via the associated panel opening, between said inclined and clamping surfaces and upwardly in said groove, and when said screw extends upwardly through said second body member opening via the associated panel opening and into threaded engagement with said bore, tightening of the screw simultaneously secures the body member to the support panel and draws the clamping member downwardly to securely clamp the cable between said clamping and inclined surfaces, the cable being clamped in said groove by said chamber side wall.

4,265,421

INSTRUMENT STAND

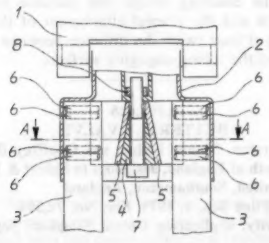
Ludwig Buchmayer, Au, Switzerland, assignor to Wild Heerbrugg Aktiengesellschaft, Heerbrugg, Switzerland

Filed Apr. 10, 1979, Ser. No. 28,709

Claims priority, application Switzerland, Apr. 19, 1978, 4212/78

Int. Cl.³ F16M *11/16*

U.S. Cl. 248—188 **7 Claims**



1. Instruments support stand having

a mounting plate (1);

a leg cap (2) rotatably secured to the mounting plate;

at least one leg rod (3) received within the leg cap;

a clamping means (4, 5, 7, 8) effecting clamping connection of the at least one leg rod within the leg cap, and pressing the respective leg rod against the leg cap,

and comprising, in accordance with the invention

a plurality of spacing and reinforcing pins (6) extending within the portion of the leg rod which is subjected to clamping force by the clamping means,

said pins being of a material having inherently stable dimensions and being more rigid in their longitudinal direction than the material of which the leg rods are made, said pins being in close contact at one end with, and perpendicular to the surfaces between which the leg is clamped by the clamping means.

4,265,422

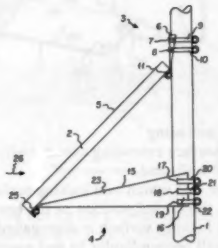
POLE MOUNTING SOLAR PANEL ASSEMBLY

Matthew J. Van Leeuwen, Beverly Hills, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 10, 1979, Ser. No. 74,173

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—219.1 **4 Claims**



1. A single pole mounting solar panel assembly comprising at least one solar panel and upper and lower brackets fixed to upper and lower, respectively, portions of said solar panel and being adapted to be fixed to said pole, said upper bracket having first flange means which encompasses a portion of the circumference of said pole and has means for fixing said flange means to said pole, said first flange means carrying a laterally extending first base plate which is fixed to said panel and angles away from said pole, said lower bracket having a plane surface which extends from said pole to said panel, said plane surface having a width adjacent said pole which is about the same as the width of said pole and which width flares out laterally as said plane surface approaches said panel until such width adjacent said panel approaches the width of said panel, second flange means carried by said plane surface adjacent said pole which flange means encompass a substantial portion of the circumference of said pole and has means for fixing said flange means to said pole, said second flange means having upstanding side means extending longitudinally of said plane surface for essentially the full length of said plane surface, said plane surface and side means terminating in a second laterally extending base plate which is fixed to said panel, said second base plate angles away from said pole to about the same degree as said first base plate, said plane surface being of such length as to hold the lower end of said panel further from said pole than the upper end of said panel.

4,265,423

SUPPORT BRACKET FOR A VENETIAN BLIND HEAD RAIL

Francis Vecchiarelli, River Edge, N.J., assignor to Hunter Douglas International N.V., Curaco, Netherlands

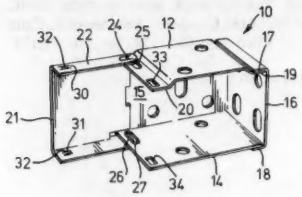
Filed May 30, 1979, Ser. No. 43,697

Int. Cl.³ A47M *1/10*

U.S. Cl. 248—264 **7 Claims**

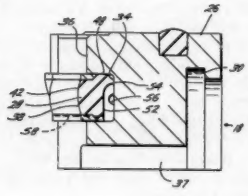
1. A support bracket for a venetian blind headrail in the form of an open sided box structure comprising, in combination:

(a) a side wall;
(b) a top wall connected to the side wall;
(c) a bottom wall connected to the side wall;
(d) a front wall having rearwardly extending top and bottom flanges running over substantially the complete width thereof;
(e) a vertical pivotal connection disposed adjacent said side wall between the top and bottom flanges and the top and bottom walls, respectively, said pivotal connection including
(1) an elongate slot formed in one of said top wall and top flange and bottom wall and bottom flange, and
(2) a hinge element in the other of said members engaged in each said slot, said slot having an axis extending substantially perpendicular to said side wall; and



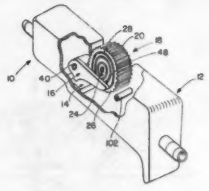
(f) latch means including
(1) a locking surface extending substantially perpendicular to said side wall, and
(2) an aperture into which said locking surface is lockingly engaged in the closed position of the bracket, and from which said locking surface is disengaged by displacing the front wall perpendicular to and away from the side wall, said locking surface disposed on at least one of said top and bottom walls or said top and bottom flanges and said aperture on the other, said latch means being spaced from said side wall and effective to prevent pivoting of said front wall away from the closed position of the bracket.

4,265,424
BLOWOUT PREVENTER AND IMPROVED RAM PACKER STRUCTURE
Marvin R. Jones, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Feb. 1, 1979, Ser. No. 8,249
Int. Cl.³ E21B *33/06*
U.S. Cl. 251—1 A **12 Claims**



1. A blowout preventer comprising a housing having a bore extending therethrough and opposed guideways intersecting the bore,
a ram slidably mounted in each of the guideways,
a packer positioned in the face of each of the rams,
each packer having on its face a surface for sealing against an opposite packer or a tubular member in the bore,
at least one recess between the adjacent faces of each ram and packer, and
at least one passage communicating from the housing bore below the rams to each recess and thereby to the back of the packer,
each recess being sufficiently large to allow movement of its packer to reduce the sealing pressures on the face of the packer to approximate an increment above well pressure.

4,265,425
FLOW CONTROL DEVICE
Marius J. Morin, Rancho Palos Verdes, Calif., assignor to Cutter Laboratories, Inc., Berkeley, Calif.
Filed Nov. 6, 1978, Ser. No. 957,778
Int. Cl.³ F16K *7/06*
U.S. Cl. 251—9 **16 Claims**

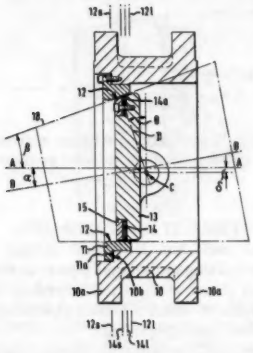


1. In a flow control device having a body member with a passage for receiving flexible tubing and which provides a clamping surface for the tubing and having a clamping member associated with the body member for urging the tubing against the clamping surface, the improvement which comprises the clamping member being pivotally attached to the body member and having a tubing-engaging surface, the tubing-engaging surface and the clamping surface having configurations such that rotational movement of the clamping member in one direction causes the tubing to be progressively compressed, the clamping member further comprising an angular body having a first extension and a second extension, the second extension being shorter than the first extension relative to the point of pivotal attachment, the ends of the first and second extensions in relation to the point of pivotal attachment of the clamping member forming an angle of about 90 degrees, the clamping member further having means for coacting with a force-inducing member fixedly mounted on the body member and adapted for rotational movement, the force-inducing member having means for activating the coacting means of the clamping member; the outer end of the second extension bearing the tubing-engaging surface and the outer end of the first extension bearing the coacting means for the clamping member to be actuated by the force-inducing member; the force-inducing member comprising a generally cylindrical body offset to a side on the first extension of the clamping member, the cylindrical body having the activating means on an outer surface for communication with the coacting means, the distance between the coacting means and the pivotal attachment of the clamping member being at least twice the distance between the pivotal attachment and the tubing-engaging surface.

4,265,426
BUTTERFLY VALVE
Victor N. Thurston, Manor Lodge, and Geoffrey B. Marshall, Malwood, both of England, assignors to Solent & Pratt (Engineering) Limited, Southampton, England
Filed Sep. 5, 1979, Ser. No. 72,594
Claims priority, application United Kingdom, Sep. 19, 1978, 37326/78
Int. Cl.³ F16K *1/226*
U.S. Cl. 251—306 **3 Claims**

1. A butterfly valve comprising a valve body and a ring mounted for axial detachment within the valve body and providing an annular valve seat having a contact surface, the axial limits of which are defined by boundary planes which are normal to the axis of the body, a valve disc, a peripheral seal on

the disc which seal has a contact surface to co-operate with the contact surface of the seat, the contact surfaces of the seat and the peripheral seal lying, when the valve is closed, on a common cone, the axis of which cone is inclined to the axis of the valve body, at least one generatrix of the cone being parallel to the axis of the valve body, said contact surface of the seat thereby ending in said boundary planes in a larger end boundary and a smaller end boundary, the disc being mounted for



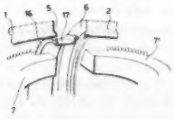
rotation about an axis which is so offset from the boundary planes beyond the larger end boundary of the contact surface of the seat and from the axis of the cone that, with the valve closed, a line extending from the rotational axis through the furthermost point of the smaller end boundary of the contact surface of the seat makes an angle to a plane normal to the body axis which is less than the angle between said body axis and the generatrix of the cone through that point.

4,265,427

SPHERICAL SEALTIGHT VALVE FOR FLUIDS

Costantino Vinciguerra, Florence, Italy, assignor to Nuovo Pignone, S.p.A., Florence, Italy

Filed Jun. 28, 1979, Ser. No. 52,795
Claims priority, application Italy, Jul. 5, 1978, 25352 A/78
Int. Cl.[3] F16K *5/00*
U.S. Cl. 251—315 **2 Claims**



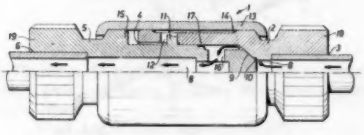
1. A spherical valve having a welded outer body comprising a valve body composed by two pieces welded together and equipped with inlet and outlet cylindrical conduits, a spherical shutter equipped with a channel and rotatable about an axis of rotation perpendicular to the valve axis, and with floating rings with sealing gaskets between said shutter and said cylindrical conduits, characterized in that said two pieces which compose the valve body are two hemispherical hoods which are welded together along a shortest-path circumferentially line and within each hood are welded, equally spaced apart from the valve axis, two half-rings having their concave forces oriented along the valve axis and in such a way that, as the two hoods are welded together, the half-rings of either hood abut edgewise the corresponding half-rings of the confronting hood so as to provide two annular housings for guiding and for bearing the thrust of the spherical shutter inserted therebetween by two specially provided circular projections formed thereon at the diametrical ends thereof in correspondence with the axis of rotation of said shutter, said projections being contained within the peripheral surface of the spherical shutter.

4,265,428

CONNECTION DEVICE FOR PROVIDING SELECTIVE FLUID COMMUNICATION BETWEEN FIRST AND SECOND CONDUITS

Friedrich Rosemeier, Hechingen, and Horst Killmaier, Hechingen-Boll, both of Fed. Rep. of Germany, assignors to Gambro Dialysatoren GmbH & Co. KG, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,323
Claims priority, application Sweden, Sep. 13, 1978, 7809624
Int. Cl.[3] F16K *31/44*
U.S. Cl. 251—346 **9 Claims**



1. A connecting device for providing selective fluid communication between first and second fluid conduits, said connecting device comprising:

a first member having a first open end for connection to a first fluid conduit, a second open end, and a first fluid passageway defined between said first and second open ends of said first member, said first fluid passageway including a seating surface between said first and second ends and a hollow interior between said second open end and said seating surface;

a second member having a first open end for connection to a second fluid conduit, and a second end disposed within said hollow interior of said first end and including a substantially closed end surface having a corresponding seating surface for sealingly mating against said seating surface of said first member, said second member being rotatable relative to said first member, and said second member having a bore extending along substantially the length thereof and further including at least one hole in the sidewall thereof disposed adjacent said second end for providing communication between said hollow interior of said first member and said bore in said second member;

cooperating guide pins and inclined guide grooves on said first and second members, said guide pins extending radially from one of said first and second members toward the other of said first and second members, and said inclined grooves being provided in the wall of the other of said first and second members for receiving said guide pins so that upon relative rotational movement between said first and second members, said inclined grooves positively axially shift said guide pins and said one member to provide relative axial movement between said first and second members between a closed position in which said seating surface and said cooperating seating surface sealingly mate to prevent fluid communication between said first ends of said first and second members and an open position in which fluid communication is provided from said first end of said first member to said first end of said second member through the gap between said seating surface and said corresponding seating surface of said first and second members, said hollow interior of said first

member, said at least one hole in said second member and said bore in said second member;

sealing means interposed in said hollow interior of said first member between the sidewalls of said first and second members for sealingly enclosing said second end of said second member in said hollow interior of said first member; and

a resilient sleeve engagable with said first and second members adjacent said first ends thereof for sealingly enclosing said second ends of said first and second members while at the same time permitting relative axial and rotational movement between said first and second members.

4,265,429

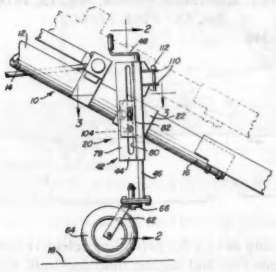
GRAIN AUGER JACK

Gary G. Formhals, R.R. #1, Smithfield, Ill. 61477

Filed Nov. 16, 1979, Ser. No. 94,919

Int. Cl.³ B66F *3/36*

U.S. Cl. 254—100 **3 Claims**



1. In combination with an inclined elongated tubular auger conveyor housing, a combined support wheel and jack assembly for the lower end of said housing, said housing including a mount supported from one side of said housing, a first vertically elongated jack base section and a second vertically elongated jack section guidingly supported from said base section for vertical adjustment relative thereto, manually operable jack means connected between said first and second sections for vertical adjustment of the second section relative to the first section, said second section including a lower end portion projecting downwardly below said first section and having a support wheel structure supported from its lower end, support means pivotally supporting said first section from said mount for adjustable angular displacement of said first section relative to said mount about a horizontal axis disposed generally normal to a vertical plane containing said housing, said mount including a substantially vertical mounting plate, said first jack section including an outstanding vertical plate portion having a slot formed therein generally paralleling said first jack section, one side of said vertical plate portion opposing and contacting the outer side of said mounting plate, a slide and clamp plate overlying the other side of said vertical plate portion, releasable clamp-type pivot fastener means secured through said slot and between said mounting plate and slide and clamp plate oscillatably supporting the latter and said plate portion from said mounting plate for angular displacement relative to said mounting plate about said pivot fastener means, said mounting plate and slide and clamp plate including coacting latch means engageable with each other through and slidable along said slot for retaining said plate portion in adjusted angular displacement relative to said mounting plate, said clamp-type pivot fastener means serving not only as a pivot connection between said mounting plate and said slide and clamp plate as well as upstanding plate portion, but also as structure for retaining said vertical plate portion in adjusted longitudinally shifted position relative to said mounting plate and slide and clamp plate.

4,265,430

DEVICE FOR MARKING AND/OR CUTTING PIPES

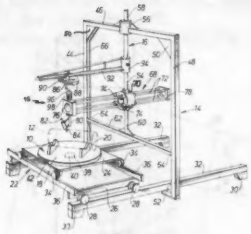
Bengt O. Eriksson, P.B. 7951, 860 20 Njurunda, and Bror E. Pahnke, Sibirienvägen 17, 852 53 Sundsvall, both of Sweden

Filed Nov. 15, 1977, Ser. No. 851,763

Claims priority, application Sweden, Nov. 24, 1976, 7613164

Int. Cl.³ B23K *7/04*

U.S. Cl. 266—54 **13 Claims**



1. A device for marking or cutting a pipe to have a straight, curved or conical shape, along a predetermined line which corresponds to a line at which a branch pipe is subsequently connected to a main pipe comprising:

a boom being pivotally mounted on an axis passing through the pivot center of said boom;

a fixture means for holding said branch pipe stationary at a desired position relative to said axis during operation of said device;

an operating means connected to said boom and swingable therewith for marking or cutting said branch pipe, said boom being adjustable relative to said axis to position said operating means at a predetermined distance from said axis corresponding to the radius of said main pipe;

a mounting unit for said boom including a piston unit being coaxial with and corresponding to said axis, said piston unit being mounted within a frame to permit axial movement of said piston unit in a direction perpendicular to said boom and in conformity with the movement of said operating means across the outside surface of said pipe; said operating means being positioned at an angle to a mounting element that projects at right angles from the boom; and

said fixture means including a detachable revolvable disc being provided with supports for said branch pipe and being pivoted at its center to permit rotation to a desired angle.

4,265,431

APPARATUS FOR WASHING DEVELOPED PHOTOGRAPHIC AND LIKE FILMS

Lodovico Falomo, Via Codroipo 5, Orcenigo Inferiore, Zoppola (Pordenone), Italy

Filed May 14, 1979, Ser. No. 38,852

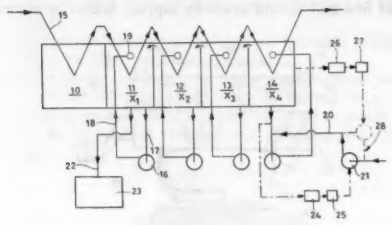
Claims priority, application Italy, May 19, 1978, 23608 A/78

Int. Cl.³ C22B *11/02*

U.S. Cl. 266—101 **5 Claims**

1. Apparatus for treating a material with washing liquid to remove a soluble constituent from the material by washing, said apparatus comprising: a plurality of washing tubs including a first tub, a last tub and at least one intermediate tub; means for conveying the material through all of said tubs in sequence beginning with the first tub; overflow passages for the washing liquid between each tub and the next; means for feeding fresh washing liquid to the last tub; means for discharging washing liquid from the first tub; and control means re-

sponsive to the concentration of solutes in the last tub for controlling said feeding means in a mode to feed liquid when



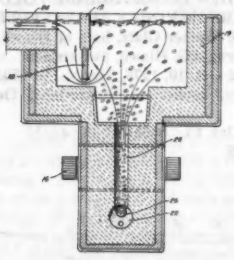
the concentration exceeds a preselected value whereby the volume of washing liquid is minimized.

4,265,432

DEGASSING MOLTEN METALS

Dimitri E. Lajovic, Strathfield, and Hans Lassner, Winston Hills, both of Australia, assignors to Impact International Pty. Limited, Smithfield, Australia

Filed Jun. 19, 1979, Ser. No. 50,094
Claims priority, application Australia, Jun. 21, 1978, PD4810
Int. Cl.³ C21C *5/48*
U.S. Cl. 266—220 **15 Claims**



1. Apparatus for the continuous treatment of molten metal comprising an inlet chamber adapted to receive untreated metal, an outlet chamber from which treated metal may be removed, a channel extending beneath and interconnecting said chambers to provide a metal flow path therebetween, said chambers being separated at least in part by an electrically conductive wall for defining with the molten metal in said channel an electrically conductive loop, means for inducing a flow of current in said loop sufficient to maintain metal within said chambers and channel in a molten form and means for introducing a purging gas beneath the surface of the molten metal.

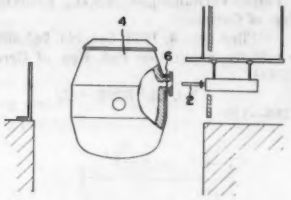
4,265,433

APPARATUS FOR REPAIRING THE TAP HOLE OF A CONVERTER

Sueki Kubo, Kitakyushu, Japan, assignor to Kurosaki Refractories Co., Ltd., Fukuoka, Japan

Filed Mar. 20, 1979, Ser. No. 22,254
Claims priority, application Japan, Feb. 3, 1979, 54/11700
Int. Cl.³ C21B *7/12*
U.S. Cl. 266—273 **24 Claims**

1. In an apparatus for repairing a tap hole of a converter comprising (i) a refractory material injection pipe which is provided with a refractory material charging inlet at a proximal portion thereof and at least one refractory material injection opening at a distal portion thereof, (ii) the distal portion of said injection pipe being of a construction which allows the replaceable attachment of a hole-refining cutter thereto, (iii) means for charging refractory material into said injection pipe, (iv) means for extruding refractory material from said injection pipe to the inner wall of said tap hole, (v) means for supporting



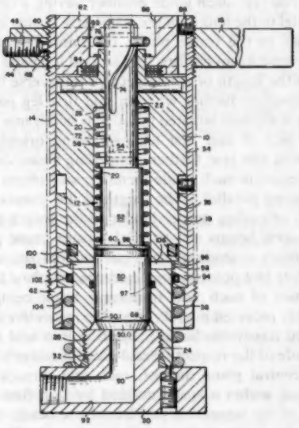
said injection pipe, said charging means and said extruding means, and (vi) cooling means provided with said refractory material injection pipe which cools said injection pipe substantially through the entire length thereof.

4,265,434

HYDRAULIC CLAMP

Harold V. Hamilton, Bedford, Mass., and Harold A. Melendy, Northridge, Calif., assignors to Barry Wright Corporation, Watertown, Mass.

Filed Aug. 8, 1979, Ser. No. 65,006
Int. Cl.³ B23Q *3/08*
U.S. Cl. 269—27 **16 Claims**



1. A hydraulic clamp comprising a clamp body, a clamp sleeve mounted to the body for rotation about a predetermined axis and for axial movement thereon, a clamp arm fixed to the clamp sleeve at right angles to said axis and means for successively effecting rotation of the clamp sleeve and axial movement thereof on the clamp body comprising a piston movable axially of the clamp body, means connecting one end of the piston to the clamp sleeve so that axial movement of the piston effects rotation of the clamp sleeve, a piston sleeve movable axially of the clamp body operable by such axial movement to effect a corresponding axial movement of the clamp sleeve and means for first supplying a pressure fluid to the piston to move it axially in a direction to effect rotation of the arm to a clamp position and then to the piston sleeve to effect axial movement of the arm to apply clamping action thereto.

4,265,435

HOME WORK BENCH

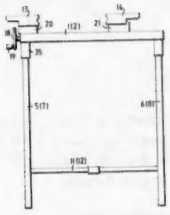
Erwin Stiltz, Winnenden-Schelmenholz; Heinz Lindenmayer, Hegnach; Wilhelm Geis, Leutenbach, and Otto Wolf, Kirchheim-Teck, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 965,888

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753685

Int. Cl.³ B25B *1/22*

U.S. Cl. 269—139 **9 Claims**



1. In a work bench including a frame formed of interconnected longitudinal and transverse section beams defining a frame plane; a vise including at least one movable vise jaw being arranged on the transverse beams and being displaceable in a direction generally parallel to the length of the transverse beams; threaded spindles supported in the frame; guide members affixed to said movable vise jaw and threadedly mounted on respective said threaded spindles for displacing said movable vise jaw; each guide member having a central plane being parallel to the length of the transverse beams and being perpendicular to the frame plane; the improvement wherein each transverse beam has first and second leg parts extending parallel to the length of the respective transverse beam and joining one another; further wherein said first leg part has inner and outer wall faces situated parallel to said frame plane; said outer wall face of said first leg part being oriented towards said movable vise jaw; further comprising means defining a groove-like recess in each guide member; said recess having a length extending parallel to the length of the transverse beams and a depth extending perpendicular to the length dimension of the transverse beams and parallel to said frame plane; the depth dimension extending from one side of the respective guide member to a point beyond said central plane thereof; said first leg part of each said transverse beam being longitudinally slidably received in said recess; the respective said first leg part of said transverse beam projecting into said recess from said one side of the respective said guide member to a point beyond said central plane thereof; each said threaded spindle being situated within a space defined by said first and second leg parts of the respective said transverse beam; said first leg part of each transverse beam fully overlapping the respective said threaded spindle as viewed from the direction of said movable vise jaw.

4,265,436

WORKPIECE SUPPORT DEVICE AND AUXILIARY SUPPORT BODY ARRANGEMENT

Robert P. Wagster, Greensboro, and Russell Pizzuto, Easton, both of Md., assignors to Black & Decker Inc., Towson, Md.

Filed Aug. 10, 1979, Ser. No. 65,732

Int. Cl.³ B25B *1/24*

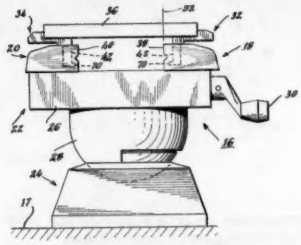
U.S. Cl. 269—274 **16 Claims**

1. An improved arrangement for supporting a workpiece comprising:

(a) a workpiece support device having first and second workpiece gripping jaw members and means for varying the spacing between said members for gripping a workpiece therebetween;

(b) first and second auxiliary support bodies;

(c) said first and second auxiliary support bodies demountably and rotatably supported on said first and second jaw members respectively; and,



(d) restraining means for selectively inhibiting and enabling demounting of said auxiliary bodies at predetermined rotational locations of said body.

4,265,437

METHOD AND APPARATUS FOR FOLDING MULTI-SHEET PAPER PRODUCTS, ESPECIALLY FOR THE FURTHER LONGITUDINAL FOLDING OF NEWSPAPERS HAVING A TRANSVERSE BREAK

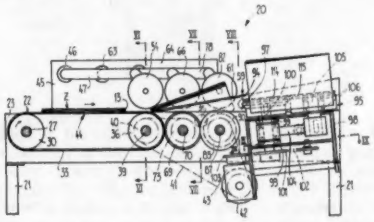
Walter Reist, and Werner Glatz, both of Hinwil, Switzerland, assignors to Ferag AG, Hinwil, Switzerland

Filed Oct. 10, 1978, Ser. No. 949,503

Claims priority, application Switzerland, Oct. 24, 1977, 12896/77

Int. Cl.³ B65H *45/00, 45/22*

U.S. Cl. 493—435 **17 Claims**



1. A method of folding individual multisheet paper products along a folding line, particularly for applying a further longitudinal fold to newspapers having an existing fold running transversely to said fold line, comprising the steps of:

applying pressure along two distinct parallel lines located on opposite sides of said folding line to that side of the paper product forming the inside of the fold to be formed;

moving the paper products in a predetermined direction during the pressure application to induce between said two parallel lines a bend in a portion of the sheets located at the inside of the fold to be formed;

said bend having a curvature opposite to the curvature of the fold to be formed; and

initiating the folding of the paper product along the folding line while said bend is still present.

3. An apparatus for folding individual multi-sheet products along a folding line, particularly for applying a further longitudinal fold to newspapers having a transverse break, comprising:

at least one pressure element having two spaced parallel pressure edges for applying a pressure along two parallel

lines located on opposite sides of said folding line to that side of the paper product forming the inside of the fold to be formed;

means located adjacent said pressure element to form said fold;

said pressure element including two rotatable folding disks each having a peripheral portion;

each pressure edge being formed at the peripheral portion of a related one of said two rotatable folding disks; and

a counter disk cooperating with said two rotatable folding disks for forming therebetween a folding and conveying gap.

4,265,438

TUCKER CYLINDER

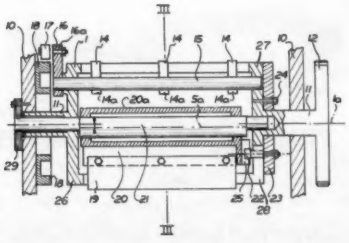
Serge Lanvin, Cires-les-Mello, France, assignor to Societe Marinoni, Montataire, France

Filed Jul. 24, 1979, Ser. No. 60,197

Claims priority, application France, Aug. 1, 1978, 78 22690

Int. Cl.³ B65H *45/16*

U.S. Cl. 493—428 **7 Claims**



1. A tucker cylinder rotatable about a first axis and which cooperates with a folding cylinder to fold a sheet, said tucker cylinder including a carrier for a tucker blade, said carrier being rotatable about a second axis which is parallel to and off set from said first axis, and guide means coacting between said tucker cylinder and said carrier for causing said carrier to rotate about said second axis when said tucker cylinder rotates about said first axis and for guiding said carrier in sliding and rotary motion relative to a third axis fixed with respect to said tucker cylinder and parallel to and spaced from said second axis.

4,265,439

METHOD AND APPARATUS FOR FOLDING A TUBULAR LENGTH OF HOSE MATERIAL TO FORM A PACKAGE

Sture Sundberg, Malmö, Sweden, assignor to Aktiebolaget Platmanufaktur, Malmö, Sweden

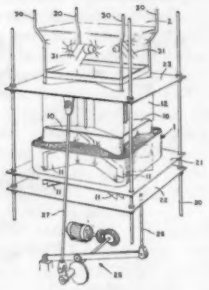
Division of Ser. No. 776,652, Mar. 11, 1977, Pat. No. 4,134,892. This application May 22, 1978, Ser. No. 907,956

Int. Cl.³ B65H *45/20*

U.S. Cl. 493—451 **13 Claims**

1. A method of folding a tubular length of hose material to form a package with superposed annular layers, said method comprising the steps of feeding a first length of tubular hose material longitudinally past a pulling device onto a retaining guide such that the tubular hose is held open and said first length extends annularly, said device being longitudinally and transversely movable and being in an initial position when the hose material is fed therepast, clamping the material to said guide, displacing said pulling device to pull a further length of tubular hose material and fold the same as an annular layer onto the first length of tubular material clamped to said guide, releasing the clamping of the material to said guide, withdrawing the retaining guide from between said first length of material and said annular layer and positioning the guide adjacent the outer surface of the annular layer, withdrawing the pulling device by longitudinally displacing the same in reverse direction to its initial position and repeating the above steps to form successive annular folds of material to constitute the superposed annular layers of the package.

7. Apparatuus for folding a tubular length of hose material to form a package with superposed annular folds, said hose material having inner and outer surfaces, said apparatus comprising reciprocably movable pulling means having opposite sides and positioned to permit passage of one of the surfaces of the hose material in open annular formation on one side of the pulling means, retaining means movable in reciprocation in first and second mutually perpendicular directions adjacent the other of



the surfaces of said openn annular material, means for moving said retaining means in a first direction of reciprocation from a first position on a first side of the pulling means to a second position on an opposite side of said pulling means, locking means for clamping the hose material against the retaining means in said first position , means for moving said locking means between a first position in which the hose material is clamped against the retainer means and a second position in which the hose material is released from the retainer means, and means for moving said pulling means from a first release position to a second operative position to form an annular fold in the hose material when the material is clamped by the locking means and retainer means.

4,265,440

COMPUTER-CONTROLLED PAPER FEEDER

Kenji Shibazaki, Nukata; Kenichi Arai, Nakano; Tsuneo Kitagawa, Toyohashi; Tomoji Murata, Toyokawa, and Kenzo Nagata, Okazaki, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 12, 1979, Ser. No. 19,893

Claims priority, application Japan, Mar. 25, 1978, 53/34424

Int. Cl.³ B65H *1/26, 3/44*

U.S. Cl. 271—9 **4 Claims**

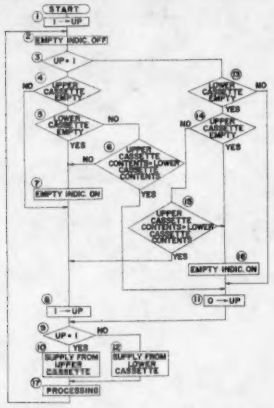
1. In a machine comprising at least first and second supply units for accommodating respective recording materials; first and second paper feeders for successively supplying the recording materials respectively from said first and second supply units; selecting means for causing either one of said first and second paper feeders to supply the recordingmaterials successively from the corresponding supply unit; first detecting means for detecting the size of the recording materials contained in each of said first and second supply units; second detecting means for detecting the presence or absence of the recording materials in each of said first and second supply units; and a control device provided for controlling the operation of at least said first and second paper feeders, the improvement wherein said control device comprises:

first discriminating means for discriminating the presence or absence of the recording materials in the selected one supply unit on the basis of a signal fed from said second detecting means;

second discriminating means for discriminating the presence

or absence of the recording materials in the other supply unit, said second discriminating means being operable when said first discriminating means discriminates that said one supply unit has become empty;

comparing means, operable when said second discriminating means discriminates that said other supply unit is loaded with the recording material, for comparing, on the basis of a size signal fed from said first detecting means the size of the recording material in said one supply unit with the size of the recording materials in said other supply unit; and



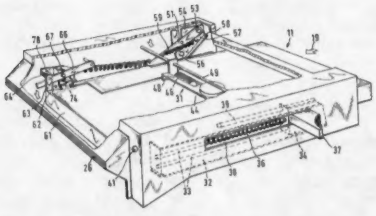
means, operable only when the sizes of the respective recording materials in said one and said other supply units have been determined to be identical with each other by said comparing means, for generating a command signal for causing the respective paper feeder to supply the recording materials from said other supply unit, such that the recording materials are fed from said other supply unit until said other supply unit is empty.

4,265,441

SHEET DISPENSING DEVICE FOR USE WITH COPYING MACHINES, AND A CONTAINER FOR THE STACK OF SHEETS

Walter K. Jonas, Neuss, Fed. Rep. of Germany, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 865,942, Dec. 30, 1977. This application Sep. 21, 1979, Ser. No. 77,672
Int. Cl.[3] B65H *3/30*
U.S. Cl. 271—19 **13 Claims**



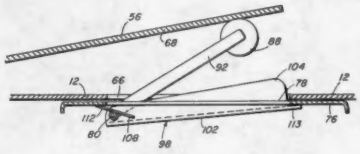
1. A sheet dispensing device for dispensing sheets from a container exposing the upper sheet in a stack, comprising spaced lateral guides inside a housing defining a space for receiving the container, conveyor means for advancing the uppermost sheet, a separator adapted to retain all the sheets with the exception of the uppermost sheet, means supporting said conveyor means and said separator for them to be raised and lowered for adaptation to the height of the stack of sheets and for affording the forward movement of said conveyor, and means for lifting the conveyor means and the separator upon insertion of the container along said guides, said lifting means comprising at least one lifting device supported in said housing which is actuated by the insertion of the container into said space and released as soon as the container has reached an end position in said housing, whereby upon being released, said conveyor means and said separator fall downward against the uppermost sheet and exert a force against the uppermost sheet which is independent of each other and of the lifting device.

4,265,442

CASSETTE LOCKING AND ALIGNMENT ASSEMBLY

Raymond G. Cormier, Nashua, N.H., and Walter C. Allen, Ipswich, Mass., assignors to Nashua Corporation, Nashua, N.H.

Filed Sep. 17, 1979, Ser. No. 76,310
Int. Cl.[3] B65H *3/06, 1/12*
U.S. Cl. 271—127 **9 Claims**



1. A photocopier sheet holding assembly comprising:

a tray for holding sheet material in a stack and adapted to be inserted into a receiving opening in the frame of a photocopier for engagement of said sheets and a plurality of feed rollers.

a shaft,

a lift member, and

means for rotatably mounting said lift member on said shaft for movement between a first position in which said lift member positions said sheets for engagement with said feed rollers and a second position in which said lift member is out of contact with said tray,

first biasing means for biasing said lift member toward said first position,

wherein the improvement comprises:

a lock means for positively engaging said tray to prevent the removal of said tray from said frame when said member is in said first position,

means for rotatably, coaxially mounting said lock means on said shaft for movement between a first position in which said lock means engages said tray and a second position in which said lock means does not engage said tray, and

second biasing means for biasing said lock means toward said first position,

positioning means cooperatively connected at least to said lift mounting means for releasably maintaining said lift member in said first and second positions,

said lift member and said lock means being mounted for direct physical contact and cooperative movement whereby said lift member and said lock means move together between said first and second positions.

9. A photocopier sheet holding assembly comprising:

a tray for holding sheet material in a stack and adapted to be inserted into a receiving opening in the frame of a photocopier for engagement of said sheets and a plurality of feed rollers,

a ramp plate supported by said tray, said ramp plate supporting said stack, and

means for pivotally moving said ramp plate about a rear

edge of said plate to move said stack into an engagement position with said feed rollers,

wherein the improvement comprises:

said tray including a base surface on which is formed an elongate projection extending transversely to said ramp plate edge, said projection having a protruding upper surface,

said ramp plate edge resting on said projection and being pivotable about said projection.

4,265,443

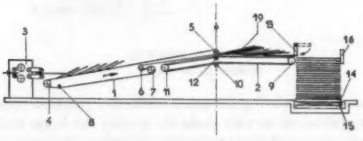
AUTOMATIC LENGTHWISE RECEIVER FOR STACKING PANELS OF DIFFERENT FORM AND SIZE AND METHOD OF USE

Daniel Berthelot, Montluel, France, assignor to S.A. Martin, Villeurbanne, France

Filed May 11, 1979, Ser. No. 38,303

Int. Cl.[3] **B65H** *29/18, 29/68*

U.S. Cl. 271—182 **1 Claim**



1. A device intended for receiving and stacking panels with a view to their delivery at the output from a continuously operating production or processing machine having a transmission, the machine being such that it has to deal with panels capable of undergoing at least once a change of form and size, and said device being of the type employing between the output from the feeder machine and the stack formation station a system of at least two continuous conveyors, a first conveyor **(1)** having a downstream telescopic portion, capable of being retracted and advanced, and receiving at its upstream end the panels leaving the feeder machine and depositing them at its downstream end onto a second and final conveyor **(2)** which in turn deposits them at the stack formation station, the said device being moreover equipped with means enabling a change of stack to be carried out, these means enabling a stop device to be interposed at the output from the final conveyor when a stack is finished, the speed of the final conveyor to be reduced, the finished stack to be discharged, and finally the stop device to be retracted and normal speed of the final conveyor to be reestablished when the stacking station is ready to receive the next stack, said device comprising

a first detector **(D1)** providing a number of pulses proportional to the distance covered by a last panel **(19)** of a first form and size on said first conveyor **(1)**,

means, connected to said machine transmission, for triggering the operation of said first detector **(D1)** when said last panel **(19)** of a first form and size arrives on said first conveyor **(1)**;

a second detector **(D3)** operating permanently and providing, by an action identical to that of the first detector **(D1)**, a number of pulses proportional to the distance travelled by the downstream telescopic portion **(5)** of the first conveyor,

a first counter **(C1)** having a presetting, a counting input for the first detector **(D1)** and a counting or deducting input for the second detector **(D3)** depending respectively upon whether the telescopic portion **(5)** is being retracted or advanced;

an output **(17)** having a presetting and providing a signal when said first counter **(C1)** posts a number **(N1)** corresponding to the maximum length **(L1)** of travel of a panel on said first conveyor, said first counter being set to be normally at zero, in the absence of the operation of the first detector **(D1)**, when the telescopic portion **(5)** is advanced to the maximum,

means connected to said output **(17)** of said first counter **(C1)** enabling, at a signal from said output, to command the slowing down of the first conveyor **(1)** to a speed less than its normal speed, the stopping of the operation of the first detector **(D1)**, the stopping of any retraction of the telescopic portion **(5)** and the triggering of the operation of a third detector **(D2)** providing, by an operation identical to that of the first detector **(D1)**, a number of pulses proportional to the distance traveled by a panel on the second and final conveyor **(2)**,

a second counter **(C2)** having a counting input for said third detector **(D2)**, a counting or deducting input for the second detector **(D3)** depending respectively upon whether the telescopic portion is being retracted or advanced, and an output **(18)** having a presetting and providing a signal when said second counter **(C2)** posts the number **(N2)** corresponding to the maximum length **(L2)** of the distance covered by a panel on said second conveyor **(2)**, said second counter being set to be normally at a value **(N)** corresponding to the maximal distance **(l)** covered by said telescopic portion, in the absence of the operation of the third detector **(D2)** and when the telescopic portion **(5)** is advanced to the maximum, and

means connected to said output **(18)** of said second counter **(C2)** enabling, upon a signal from said output of said second counter, to command the stopping of said third detector **(D2)** and the triggering of a change of stack.

4,265,444

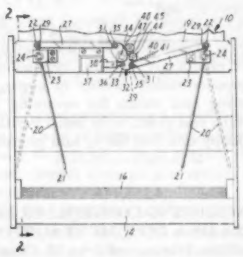
PAPER SHEET STACKER

David E. Berglund, Denmark Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 4, 1979, Ser. No. 72,476

Int. Cl.[3] **B65H** *31/08*

U.S. Cl. 271—207 **5 Claims**



1. A paper sheet stacker for use in a paper feeder comprising:

a frame,

a pair of bails having their proximate ends pivotally mounted in a predetermined spaced relationship on said frame for movement about an axis generally parallel to the direction of feed of a sheet of paper, each bail having an arcuate portion extending downward and generally in the direction opposite that of the feed of the sheet for supporting and directing the dispensed sheet of paper as it falls from the paper feeder, and each bail terminating in a distal end,

means for pivoting said bails about said axis between a first position where said distal ends are closely spaced so as to afford support of a falling sheet of paper by said bails and a second position where said distal ends are separated so as to release the sheet of paper when the sheet has reached a predetermined position, and

an output tray disposed beneath said distal end so as to catch the falling sheet of paper upon the release of the sheet by

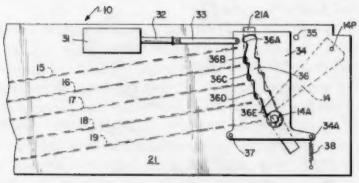
said bails, said tray including an end portion which one edge of the falling sheet contacts.

4,265,445

PHOTOCOPIER COLLATOR

Fred R. Langner, 48 Hillcrest La., Williamsport, Pa. 17701

Filed Jun. 8, 1979, Ser. No. 46,673
Int. Cl.³ B65H *29/60, 31/24*
U.S. Cl. 271—296 **11 Claims**



1. A collator adapted for use with an electrostatic photocopy machine comprising:

a plurality of bins mounted within a housing;

a movable chute operatively positioned to receive photocopies from a discharge slot of said electrostatic photocopy machine and divert said photocopies to each of said plurality of bins, said movable chute being selectively pivoted from an initial position;

means for selectively pivoting said movable chute including an electrical connection adapted to receive a first pulse from said electrostatic photocopy machine indicating that a photocopy has been discharged therefrom, said pulse actuating said means for selectively pivoting said movable chute to lower said movable chute for diverting photocopies to each successive bin, said means for selectively pivoting said movable chute including a first solenoid actuated by said first pulse and operatively connected to a cam latch, said cam latch including a tortuous path with flanges for guiding a follower connected to said movable chute to lower said movable chute with each actuation of said first solenoid; and

means for returning said movable chute including an electrical connection adapted to receive a second pulse from said electrostatic photocopy machine indicating the completion of a predetermined number of copies, said second pulse actuating said means for returning said movable chute to return said chute to its initial position for diverting a photocopy to a first bin of said plurality of bins.

4,265,446

SELF CONFIGURING CONTROLLER FOR THE STACKER AREA OF A DOCUMENT SORTING SYSTEM

Andrew H. McMillan, Wayne, and John M. Chambors, Canton, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 2, 1979, Ser. No. 54,290
Int. Cl.³ B65H *29/58*
U.S. Cl. 271—305 **3 Claims**

1. In the stacker area of a document sorting system having a host processor generating a document destination code and a repeated track controller position code,

a plurality of stacker modules where each module contains a plurality of pockets in which documents are sorted, and

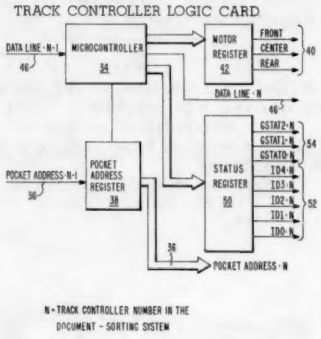
a plurality of diverter gates directing documents to appropriate pockets, a self configuring track controller for each diverter gate, each track controller comprising:

an identical and interchangeable logic card responsive to the document destination code and to the track controller position code, the logic card including:

means for receiving the document destination code indicating the pocket to which a document is to be sorted;

a microcontroller for receiving the track controller position code and for generating diverter gate movement commands, the track controller position code designating the sequential position of the track controller in the document sorting system by a number of voltage transitions;

a motor register, responsive to the diverter gate movement commands, for positioning the diverter gates;



means for translating the track controller position code to an identification service code for testing the logic card; and

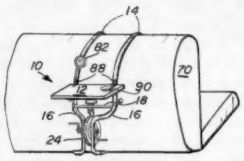
means, responsive to the microcontroller, for generating a status code to the host processor to indicate a malfunction and to cease continued track controller position code transmissions when the repeatedly generated track controller position codes differ.

4,265,447

CAR TRAY AND EXERCISING APPARATUS

Bernice A. Shafer, 700 W. Predmore, Lake Orion, Mich. 48035

Filed Jan. 12, 1979, Ser. No. 3,005
Int. Cl.³ A63B *23/04;* **A47B** *37/00*
U.S. Cl. 272—73 **4 Claims**



1. A car tray and exercising apparatus for a vehicle comprising:

a vertical support means, said support means having a lower end resting on the vehicle floor;

an exercise wheel supported by an axle passing through the vertical support means, the axle having at each end a pair of radial arms, an arm for each axle end extending in opposed directions, each arm at its end is bent at a right angle projecting outward from the wheel to form a pedal, and wherein said vertical support means comprises:

two upper support members each with an upper end curving forward in an arcuate manner forming a hook to engage the top of a front seat of the vehicle, the lower end of each of the upper support members telescopingly mating with a respective lower support member, means for adjustably attaching the telescoped members;

the lower support members extending downward and inward to meet the axle, then downward with the lower end of the lower support members including floor engaging means; and

a bore through the lower support members to rotatably support the axle;

a tray rotatably supported by the upper support members, said tray being rotatable between a horizontal and a vertical position.

4,265,448

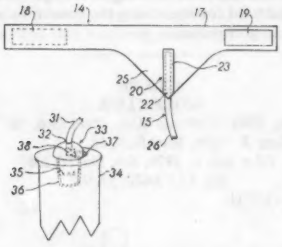
RACQUET SAFETY TETHER ASSEMBLY

Carl Anderson, Jr., Rte. 4, Missoula, Mont. 59801

Filed Dec. 18, 1978, Ser. No. 970,544

Int. Cl.³ A63B *69/38*

U.S. Cl. 273—29 A **7 Claims**



1. A racquet safety tether assembly including a wrist-encircling portion and a racquet handle-connecting portion, said wrist-encircling portion comprising a flexible band member, fastening means associated with each end of said band member, said band member having a section of greater width extending from one edge of said band member, cord-holding means disposed adjacent said section of greater width of said band member, said racquet handle-connecting portion comprising a single cord having structural integrity, one end of said cord being affixed to said cord-holding means of said wrist-encircling portion, said cord-holding means maintaining said one cord end in a fixed perpendicular position with respect to said band member and in substantially the same plane thereof, and the opposite free end of said cord including fastening means capable of connection to the end of a racquet handle, said fastening means including a male socket portion engageable with a cavity in the butt end of a racquet handle and extending longitudinally thereof, said male socket portion including an end cover with an opening into which a cord end is inserted and including a shank section of substantial thickness with securing means for affixing said shank section to said cavity, whereby when said wrist-encircling portion is positioned around a player's wrist and fastened, said cord-holding means will maintain said one cord in a fixed perpendicular position extending toward the player's hand.

4,265,449

SIMULATED BOWLING GAME

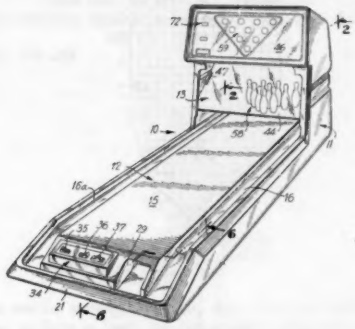
Lawrence L. Reiner, Woodbury, N.Y.; Michael Marra, Huntington, Conn., and Michael F. Hennig, Fort Lee, N.J., assignors to Louis Marx & Co., Inc., Stamford, Conn.

Filed Feb. 10, 1978, Ser. No. 876,788

Int. Cl.³ A63D *3/00*

U.S. Cl. 273—41 **13 Claims**

1. In a simulated bowling game including a bowling alley and a bowling pin means at a rear end of said alley toward which a bowling ball is adapted to be rolled from a front end of the alley, the improvement comprising bowling pin means including a plurality of fixed illuminating bowling pin means disposed in a ten pin pattern, each of said fixed illuminating bowling pin means being adapted to be illuminated and produce a bowling pin image, a surface that is at least partly-reflective at an incline with respect to said alley, said partly-reflective surface being spaced apart from said alley to provide a clearance for said ball and further disposed in facing relationship with respect to said plurality of illuminated bowling pin means so that said partially-reflective surface can produce a reflective illuminated image of each of said illuminating bowling pin means at said front end of said alley, a plurality of electrical contact means positioned in a predetermined pattern at the rear end of said alley, each of said contact means being adapted to produce a contact signal when a bowling ball is displaced into contact with same, and control circuit means for receiving each of said contact signals produced by said contact means when a ball is rolled toward said rear end of said alley



and in response thereto is adapted to selectively deenergize certain of said fixed illuminating bowling pin means to thereby prevent a reflective image of same from being produced, a display panel being disposed proximate to said plurality of fixed illuminating bowling pin means disposed in a pattern, and said panel being positioned intermediate each of said fixed illuminated bowling pin means and the front end of said bowling alley, to thereby provide a display coordinated with the image of the fixed illuminating bowling pins off the reflective surface.

4,265,450

METAL RACKETBALL RACKETS

Charles A. Drake, and Raymond M. Bayer, both of San Diego, Calif., assignors to Leach Industries, San Diego, Calif.

Filed Jun. 4, 1979, Ser. No. 45,406

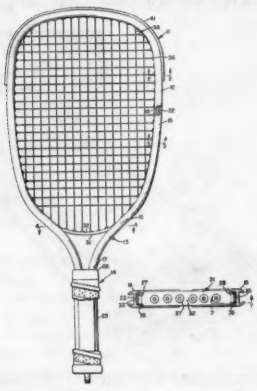
Int. Cl.³ A63B *49/12*

U.S. Cl. 273—73 G **7 Claims**

1. A racketball racket comprising a metal frame in the form of a single strip of metal of substantially uniform cross-section bent intermedially to provide a head portion that defines the striking area and merges through a reversely curved throat portion to terminate in side by side parallel end portions, a rigid throat element extending across said frame at the throat portion and defining the inner margin of said striking area, means frictionally mounting opposite ends of said throat element in said frame at said throat portion in connection regions wherein the lateral flexibility of the frame is maintained substantially the same as in other parts of the frame in the head portion, and a handle assembly enclosing said end portions for maintaining said end portions in parallelism and urging opposite sides of said throat portion towards said throat element thereby positively maintaining said throat element in tight assembly with said frame, said handle assembly being the sole means by which said throat element is retained by said frame.

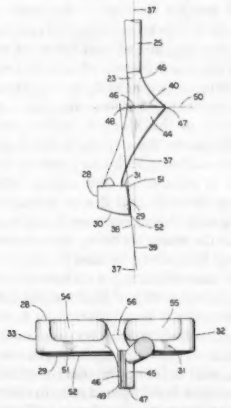
7. A method of manufacturing a racketball racket comprising the steps of bending a strip of lightweight metal intermediate its ends to provide a head portion, a reversely curved throat portion and adjacent side by side ends providing a handle portion, said strip being of channel cross-section with the base of the channel defining the margin of the striking area within the head portion, holding said strip in the bent condition that corresponds with that it will occupy in final assembly, and while the strip is so held (a) forming in said base along the head portion and adjacent sections of the throat portion a series of

string or string eyelet receiving holes and (b) forming opposed recesses in the base at the throat portion for frictionally mounting a throat piece, placing a throat element in the throat portion with its opposite ends frictionally received in said recesses,



and fitting a handle housing onto said side by side frame ends to effectively urge the strip ends and the sides of said throat toward each other and hold the throat piece in assembly whereby said handle assembly constitutes the sole means by which said throat element is retained by said frame.

4,265,451
GOLF PUTTER
Floyd V. Bernhardt, 5532 N. High School Rd., Indianapolis, Ind. 46254
Filed May 3, 1979, Ser. No. 35,613
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—167 G **12 Claims**



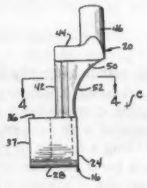
1. An offset-style golf putter for putting a golf ball along a path of desired golf ball travel, said golf putter comprising:

a shaft member having a gripping portion adjacent a first end and a primary longitudinal axis;

a clubhead having a rear surface, a ball-striking surface, a sole portion between said rear surface and said ball-striking surface and a top surface between said rear surface and said ball-striking surface, said ball-striking surface defining and coincident with a ball-striking geometric plane; and

a neck member joined to and extending between said shaft member and said clubhead, said neck member having a weight-balancing portion disposed in the direction of desired golf ball travel forward of said ball-striking surface and forward of said primary longitudinal axis, said weight-balancing portion acting as a weight compensation to the clubhead for improving the overall balance of the offset-style golf putter.

4,265,452
GOLF CLUB
Tony J. Vella, 3504 Wesleyan Ave., Rockford, Ill. 61108, assignor to Tony J. Vella, Rockford, Ill.
Filed Jul. 6, 1979, Ser. No. 55,265
Int. Cl.[3] A63B *53/02*
U.S. Cl. 273—167 G **10 Claims**



1. A golf club comprising:

a head having a frontal striking surface, a top surface, a bottom surface, a rear surface, and toe and heel portions;

an offset shank including a lower leg, an intermediate leg and an outer leg; the lower leg being connected to the top surface of the head and extending perpendicularly therefrom; the intermediate leg extending forwardly of the striking surface a distance which is at least a fraction of the radius of a golf ball; the outer leg extending upwardly from the outer end of the intermediate leg and inclined toward the heel portion at an acute angle from a plane defined by the other two legs;

a reinforcing rib interconnecting the lower and intermediate legs and extending substantially the entire length of each of said legs; and the outer extremity of the rib defining a concave, arcuate edge, the lower end of which is contiguous with the frontal striking surface;

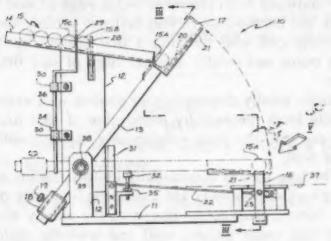
an elongate shaft generally coextensive with said outer leg and having one end connected to the outer leg and a grip at its other end; and

said outer leg and said elongate shaft being arranged at an angle slightly less than 90° to the intermediate leg so that the center of the grip is substantially in line with the lower leg.

4,265,453
AUTOMATIC GOLF TEEING DEVICES
Rupert H. C. Loof, 3 Rous Crescent, Forrest, Canberra, Australian Capital Territory, 2603, Australia
Filed Dec. 15, 1978, Ser. No. 970,062
Claims priority, application Australia, Dec. 16, 1977, PD2799; Nov. 3, 1978, PD6625
Int. Cl.[3] A63B *57/00*
U.S. Cl. 273—201 **10 Claims**

1. A golf ball teeing apparatus comprising a frame, a tee fixed stationary with respect to the frame, said tee being constructed and mounted so as to be deflected from a ball receiv-

ing position upon a ball or portion of the tee being struck by a golf club, a magazine elevated with respect to said tee and adapted to receive a supply of balls, a carrier to receive a ball from said magazine and deposit said ball on said tee, said carrier including a horizontally pivoted arm with a receptacle adjacent one end to retain a ball during movement of the carrier between said magazine and said tee, said arm being balanced so that a ball deposited in said receptacle causes said arm to pivot under the weight of said ball, control means to regulate the delivery of balls from said magazine to said receptacle, said control means includes a first ball retaining means which upon actuation thereof allows a ball to leave said magazine to enter said receptacle, a second ball retaining means to control the delivery of balls within said magazine, said first ball retaining means being actuated by said deflection of said tee and said second ball retaining means being actuated by the



pivoting movement of said arm, and wherein said first ball retaining means comprises a first gate projecting into said magazine so as to prevent exit of balls from the magazine, and a pivot mounting said gate on said frame so that said gate is pivotally movable between a first position projecting into said magazine and a second position allowing balls to leave said magazine, said first gate including an elongated part having adjacent one end a projection to enter said magazine and a counter-weight at the other end biasing said projection to said first position, and said first gate being pivoted about a horizontal axis intermediate the ends of said elongated part, and wherein said second ball retaining means includes a second gate movable between a first position engaging a ball in said magazine and a second position clear of the balls in said magazine thereby allowing balls to engage said first ball retaining means.

4,265,454

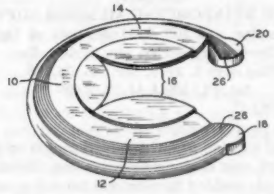
DISC SHAPED PROJECTILE HAVING NOTCHED PORTION

Mark S. Bayless, Rte. 2, Napoleon, Ohio 43545

Filed Jun. 29, 1979, Ser. No. 53,697

Int. Cl.³ A63B *65/10*; A63H *27/00*

U.S. Cl. 273—427 **6 Claims**



1. A game comprising a disc projectile having a generally convex upper surface and a generally concave lower surface, said projectile having a periphery defining a circular edge extending through an arc segment greater than 180°, said periphery having a notch formed therein, said circular periphery segment and said notch defining between them a main body portion and two spaced apart leg portions, said notch having a radially inward extent greater than the radius of said projectile, and a scoring stake as a target for said projectile.

4,265,455

SEALING DEVICE

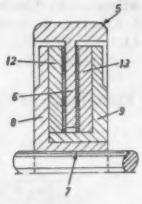
Bengt Lundgren, Lerum, Sweden, assignor to SKF Nova AB, Goteborg, Sweden

Filed Nov. 14, 1978, Ser. No. 960,660

Claims priority, application Sweden, Dec. 1, 1977, 7713599

Int. Cl.³ F16J *15/44*

U.S. Cl. 277—53 **3 Claims**



1. A seal for sealing the annular space between confronting annular surfaces in inner and outer machine members which are rotatable relative to one another comprising an outer annular support ring of generally T-shaped cross section, the cross bar of the outer annular support ring engaging in the annular surface of said outer machine member, a pair of side ring members of L-shaped cross section which are nested and secured together to form a U-shaped annular ring mounted on the confronting surface of said inner machine member which circumscribes and encloses substantially the entire body portion of said outer annular support ring, a pair of disc-like sealing members in the annular space between the sidewalls of said U-shaped annular ring members and the shank of said outer annular support ring including flexible air permeable sealing elements filling the space between the shank of said outer support ring and the opposing spaced legs of the inner annular member, said inner and outer supporting rings together with said sealing means forming an integral unit and said seal being symmetrical through a transverse center plane.

4,265,456

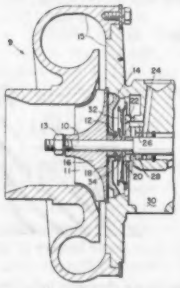
SEALING ASSEMBLY

Howard S. Atkin, Leeds, England, assignor to Holset Engineering Company Limited, Huddersfield, England

Filed Jun. 7, 1979, Ser. No. 46,410

Int. Cl.³ F16J *15/34*

U.S. Cl. 277—95 **1 Claim**



1. A turbocharger assembly comprising:
a compressor housing having an internal cylindrical surface,

a shaft for a compressor wheel, said shaft having an externally facing cylindrical surface having an annular groove therein, the shaft being disposed and rotatable within the compressor housing, and

a sealing ring disposed in said annular groove in said second member and having an interference fit with the internal cylindrical surface of said compressor housing, said sealing ring being continuous and formed from polytetrafluoroethylene having sufficient elasticity to enable the inner diameter of the ring to be temporarily expanded to be positioned within said groove.

4,265,457

SHAFT SEALS

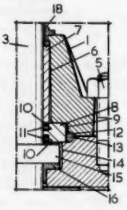
John W. Lambie, Kilmarnock, Scotland, assignor to Neptune Glenfield Limited, Kilmarnock, Scotland

Filed Oct. 12, 1979, Ser. No. 84,064

Claims priority, application United Kingdom, Feb. 14, 1979, 05276/79

Int. Cl.[3] **F16K** *41/16, 43/00;* **F16J** *15/26*

U.S. Cl. 277—105 **6 Claims**



1. A shaft seal which incorporates a casing formed with a stepped bore having a small diameter portion extending from one end of the casing, the diameter of said portion being greater than the diameter of the shaft to be sealed, and a large diameter portion extending from the other end of the casing, a bearing sleeve arranged to fit the shaft held against rotation within the smaller diameter portion of the bore, a seal-carrying ring contained within the larger diameter portion of the bore, each end face of the ring being formed with an annular notch which penetrates some distance along the inner surface of the ring, a resilient sealing ring contained in each notch and a resilient sealing ring located between the outer surface of the ring and the casing.

4,265,458

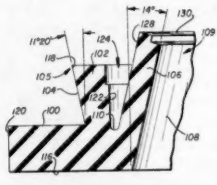
SEAL FOR ELEVATOR DRIVE MECHANISM

John H. Wheeler, Dallas, Tex., assignor to The Texacone Company, Dallas, Tex.

Filed Sep. 6, 1979, Ser. No. 73,024

Int. Cl.[3] **F16J** *15/32*

U.S. Cl. 277—205 **4 Claims**



1. A seal for use in an elevator hoist drive mechanism comprising:

an annular body of elastomeric material consisting of a synthetic rubber such as butyl, viton, nitrile and coated or milled urethane, natural rubber or plastic such as Teflon having a substantially radially disposed external wall;

a substantially axially disposed outer wall extending internally from the outer radial edge of said external wall;

a substantially radially disposed bonding wall extending inwardly from the axially internal edge of said outer wall to a point lying radially outward from the inner radial edge of said external wall for attaching said seal to the external surface of the gear housing of said elevator hoist drive mechanism;

a first seal surface extending angularly radially outwardly and axially internally from the inner radial edge of said bonding wall at an angle of substantially 78° 40' from said bonding wall;

a substantially radially disposed first seal surface end wall extending radially inwardly from the radially outer and axially internal edge of said first seal surface to a point radially outward from the inner radial edge of said external wall, the intersection of said first seal surface and first seal surface end wall defining a first sealing lip at the radially outer and axially internal edge of said first seal surface;

a substantially axially disposed outer groove wall extending externally from the radially inner edge of said first seal surface end wall to a point substantially coplanar with said bonding wall;

a groove bottom wall of substantially uniform radius and an arc length of substantially 166°, with the first edge of said groove bottom wall coinciding with the axially external edge of said outer groove wall and with the radius of curvature of said groove bottom wall lying radially inwardly and axially externally from the outer groove wall;

an inner groove wall extending angularly radially inwardly and axially internally from the second edge of said groove bottom wall at an angle of substantially 14° from the inner surface of a cylindrical surface formed by extending the edge formed by the intersection of said second edge of said groove bottom wall and the radially outward and axially external edge of said inner groove wall in an axially internal direction;

a second seal surface end wall extending angularly radially inwardly and axially externally from the radially inner and axially internal edge of said inner groove wall and formed substantially perpendicular to said inner groove wall; and

a second seal surface extending angularly radially outwardly and axially externally from the radially inner and axially external edge of said second seal surface end wall to intersect with the radially inner edge of said external wall, said second seal surface substantially perpendicular to said second seal surface end wall and substantially parallel to said inner groove wall with the intersectiion of said second seal surface and second seal surface end wall defining a second sealing lip at the radially inward and axially internal edge of said second seal surface.

4,265,459

SWAB CUP REINFORCING MEMBER SUPPORT

Donald R. Greenlee, and Bill J. Hyde, both of Dallas, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 8, 1979, Ser. No. 36,970

Int. Cl.[3] **F16J** *15/56, 9/00*

U.S. Cl. 277—212 C **7 Claims**

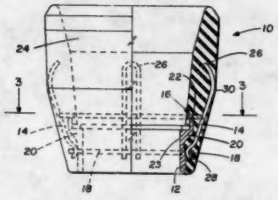
1. A well swab cup comprising:

(a) an annular bushing adapted to be disposed on a supporting mandrel, said bushing having a cup like elastomeric material body molded thereon and extending upward;

(b) said body including a plurality of circumferentially spaced longitudinally extending reinforcing members mounted with said bushing and extending upward in said body; and

(c) a reinforcing member positioning support means having means adapted to be positioned above said bushing within said body to position said reinforcing members in a spaced

relation to each other around the circumference of said swab cup and to support these reinforcing members in this spaced relation;



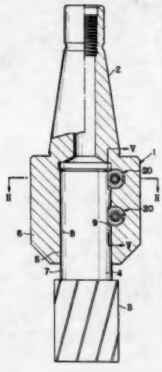
said support means having an annular member having a plurality of spaced recesses around and opening radially outwardly from the outer periphery thereof to receive said reinforcing members.

4,265,460

TOOL HOLDER

Chikara Senzaki, Nara, Japan, assignor to Manyo Tool Kabushiki Kaisha, Nara, Japan

Filed Jul. 23, 1979, Ser. No. 59,750
Claims priority, application Japan, Jul. 26, 1978, 53-90450
Int. Cl.³ B23B *5/22*
U.S. Cl. 279—97 **11 Claims**



1. A tool holder for holding a shank, said shank having a flat surface on the outer circumference thereof, comprising:

a holder body having an axial bore therein adapted to receive said shank;

a tangential hole extending through said holder body in a direction substantially tangential to said bore, said tangential hole intersecting said bore to define an aperture between said hole and said bore, said aperture being positioned to register with the flat surface of a shank received in said bore;

a locking element displaceable within said tangential hole, said locking element including a locking cotter having a sloping surface, said sloping surface being adapted to wedgingly engage through said aperture with the flat surface of a shank received in said bore, said locking cotter having an axial groove on an outer peripheral surface thereof;

means for limiting the movement of said locking cotter mounted in said holder body, said means for limiting being engaged with said axial groove whereby said sloping surface is maintained in engaging alignment with said flat surface; and

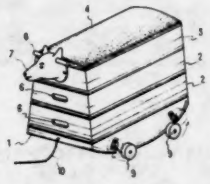
thrust means for moving said locking cotter within said tangential hole, said thrust means including a locking screw threadably reeived in an axially extending threaded opening in said locking cotter, whereby rotation of said locking screw moves said locking cotter along said tangential hole into or away from engagement with a shank received in said bore.

4,265,461

COMBINED PLAYTHING AND RECEPTACLE FOR INFANTS

Masahisa Okubo, 837-I, Hachigasaki, Matsudo-shi, Chiba-ken, Japan

Filed Jan. 19, 1979, Ser. No. 4,893
Claims priority, application Japan, Jan. 21, 1978, 53-6068[U]
Int. Cl.³ A63G *13/10*; B62B *13/18*
U.S. Cl. 280—1.13 **5 Claims**



1. A combined receptable and plaything comprising a truck, a box-like structure, removably mounted on said truck, formed of a bottom frame membber, a top frame member, and at least one intermediate member, each of said frame members having sides inclined inwardly to the vertical, defining a truncated pyramid shape of successively reduced size in height, length and width, the upper edge of each frame member having a pyramidal dimension conforming to the pyramidal dimension of the lower edge of the next successive frame member of reduced size enabling said frame members, in one condition, to be stacked successively edge to edge from bottom to top one upon the other to form an enlarged truncated pyramid-shaped box and in a second condition to be nested successively from top to bottom completely one within the other, said top frame having a cover, said truck having side walls formed with a curved lower edge forming runners, and wheels journalled on shafts mounted on said truck and movable to secure said wheels alternatively in an operative position outward of the curved edge and an inoperative position within the curved edge, whereby said truck may be selectively employed as a sledge or wagon.

4,265,462

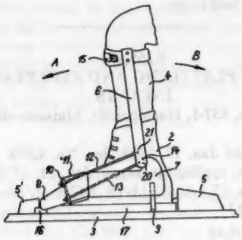
SUPPORT DEVICE FOR SKIERS

Hans-Anton Willi, Gassa Sure 25, 7013 Domat/Ems, Switzerland

Continuation of Ser. No. 953,354, Oct. 23, 1978, abandoned, which is a continuation of Ser. No. 855,085, Nov. 28, 1977, abandoned. This application Aug. 9, 1979, Ser. No. 64,990
Claims priority, application Switzerland, Nov. 26, 1976, 14913/76
Int. Cl.³ A63C *9/00, 3/02*
U.S. Cl. 280—11.36 **19 Claims**

1. A support device for the shank of a skier's leg comprising a frame adapted to be fixed with respect to a ski and to extend on opposite sides of ski boot, two lever arrangements respectively separately and independently pivoted to opposite sides of said frame in positions to extend along opposite sides of the skier's shank approximately parallel thereto, said lever arrangements being separately pivoted about separate pivot positions approximately at the height of the skier's ankle for said lever arrangements to swing forwards and backwards with respect to the length of the ski, each lever arrangement comprising at least one lever, means for securing said lever

arrangements to the skier's shank in the calf region thereof, spring means mounted on said frame and mechanical means interposed between said lever arrangements and said spring



means whereby said spring means oppose swinging movement of said lever arrangements both forwards and backwards with respect to a zero position.

4,265,463

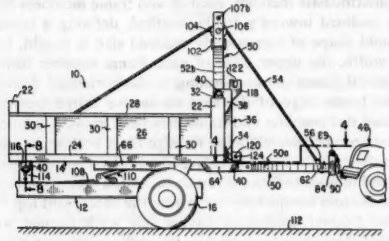
COMBINATION VEHICLE FOR TOWING, DUMPING AND THE LIKE

Robert S. Perruso, 150 Maple St., West Orange, N.J. 07052

Filed Jan. 19, 1979, Ser. No. 4,862

Int. Cl.[3] B60P *3/06*

U.S. Cl. 280—402 **14 Claims**



1. A vehicle system including a vehicle adapted for alternative use either in a capacity of a dump truck or a tow truck and readily converted from one use to the other, comprising:

(a) a chassis;

(b) a bed above and extending along said chassis;

(c) means on said chassis for mounting said bed whereby said bed normally resides in a first substantially horizontal position relative to said chassis, yet is adapted for movement pivotally, said mounting means including a pivot axis located at the rear end of said chassis and said bed, whereby said bed in movement, moves pivotally to a second inclined position;

(d) lifting means including a boom carried by said bed and extending rearwardly of the bed to define substantially a parallel extension, said bed and boom moving as a unit from said first to said second position so as to cause said boom to be inclined downwardly thereby positioning the end of said boom in position for releasably connecting said lifting means to a disabled vehicle to be lifted and towed; and

(e) means connected between said chassis and bed for moving said bed from said first to said second position so that said disabled vehicle may be connected to said lifting means and utilizing the leverage of said bed and boom in return to said first position thereby to lift said disabled vehicle for towing, said moving means acting on said bed within the end adapted to be inclined upwardly.

4,265,464

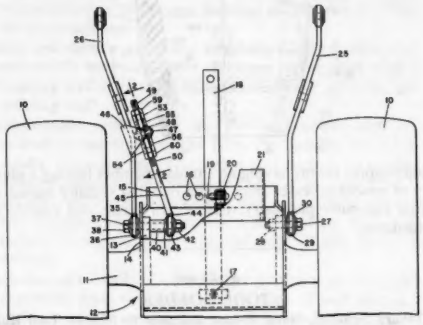
TRACTOR DRAFT LINK STRUCTURE

Henry J. Lange, Juneau, Wis., assignor to Deere & Company, Moline, Ill.

Filed Aug. 17, 1979, Ser. No. 67,230

Int. Cl.[3] B60D *1/16*

U.S. Cl. 280—460 A **5 Claims**



1. The lower link structure of a tractor hitch comprising: a transverse pivot pin supported intermediate its ends on the tractor; a draft link extending rearwardly from one end of the pin; a rigid stabilizer element extending rearwardly from the opposite end of the pin and converging toward the draft link; ball and socket joints between the ends of the pin and the draft link and the element respectively; a ball and socket structure supported on an intermediate portion of the draft link composed of a socket member fixed to the draft link and a ball freely articulated in the socket member, said ball having a diametrically extending opening for slidably receiving the rearwardly extending element; and an adjustable joint between the ball and rearwardly extending element composed in part of a threaded surface portion on the element with threaded surfaces extending to opposite sides of the ball; a pair of nut members threadedly mounted on the respective threaded surfaces and adjustable therealong, each of said nut members being composed of a threaded nut portion with internal threads carried on the respective threaded surface and a collar extending axially from the nut portion toward the ball to an end that is engageable with the ball, said collar being external of and in protective relation to a portion of the respective threaded surface.

4,265,465

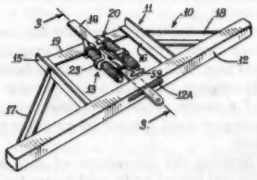
TRAILER BUMPER HITCH

William J. Deitrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Filed Aug. 17, 1979, Ser. No. 67,468

Int. Cl.[3] B60D *1/14*; F16G *7/10*

U.S. Cl. 280—478 A **8 Claims**



1. In a trailer hitch apparatus including a mounting frame adapted to mount the apparatus beneath a towing vehicle including horizontal frame means, and further including a draw bar, a movable member releasably securable to and re-

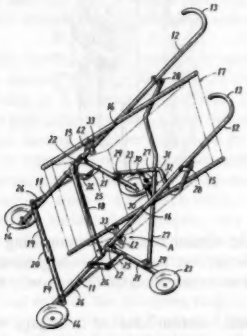
ceiving said draw bar for moving longitudinally of the axis of said draw bar when secured to said draw bar, and spring means carried with said member for urging said member to a rest position and for cushioning draw bar forces, the improvement comprising mounting means for mounting said spring means and said member carried therewith to said horizontal frame means including at least one horizontal element adapted to be assembled to said horizontal frame means; fastener means for securing said element to said frame means; said mounting means including receptacle means at least partially defined by said horizontal element and adapted to receive said horizontal frame means for mounting said spring means and said movable member to said horizontal frame means in such a manner that as said fastener means is tightened to secure said element to said horizontal frame means, said spring means and said movable member are raised relative to said draw bar.

4,265,466

BABY CARRIAGE

Kenzou Kassai, Osaka, Japan, assignor to Kassai Kabushikikaisha, Osaka, Japan

Filed Aug. 2, 1979, Ser. No. 62,911
Claims priority, application Japan, Dec. 15, 1978, 53-155283
Int. Cl.³ B62B *7/08*
U.S. Cl. 280—648 **11 Claims**



1. A baby carriage, comprising:

a carriage body including a pair of left and right members,

a plurality of wheels rotatably mounted to the lower ends of said carriage body for rotation on the ground,

a pair of left and right hammock supporting rods extending in parallel with each other and pivotally provided to said pair of left and right members, respectively, the axis of said pivotal provision extending along a line running between said pair of left and right members, said pair of hammock supporting rods being turnable about said axis of said pivotal provision,

means for selectively fixing said turning of said pair of hammock supporting rods,

a hammock supported by and spread between said pair of left and right hammock supporting rods, and

a hammock shaping member coupled to said carriage body extending substantially in the lateral direction thereof to be in selective contact with the lower surface of said hammock for shaping said hammock,

said hammock comprising

a sheet fixed at the both side edges to said pair of left and right hammock supporting rods so as to be curved in a dish shape with a slack between said pair of left and right hammock supporting rods,

a sitting portion including a relatively hard core member fixed at a central portion of said sheet between said pair of hammock supporting rods, and

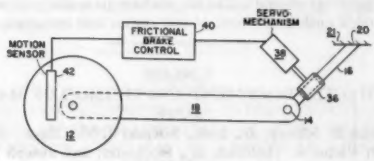
a back portion including a relatively hard core member fixed adjacent to said sitting portion and at a central portion of said sheet between said pair of hammock supporting rods, whereby a tilt angle of said back portion is changed in accordance with turning of said pair of left and right hammock supporting rods as pivotally provided and thus the crossing angle between said sitting portion and said back portion is changed while said hammock shaping member is in contact with and supports said hammock.

4,265,467

FRICTIONAL SUSPENSION DAMPING SYSTEM

Benjamin J. Aleck, Jackson Heights, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Apr. 4, 1979, Ser. No. 26,932
Int. Cl.³ B60G *11/18*
U.S. Cl. 280—721 **19 Claims**



1. A system to vary the energy absorbing characteristics of a torsion bar system, said means comprising:

suspension apparatus for supporting a platform upon a moveable member, said apparatus including a torsion bar fixed at a first end to said platform, and a connecting member coupling a second end of said torsion bar to a moveable member;

frictional braking means operatively connected to said torsion bar; and

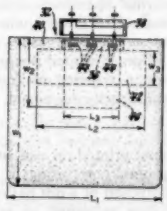
motion sensor apparatus operably connected to said moveable member and further connected to said braking so as to vary the application of frictional restraint to the surface of said torsion bar in accordance with movement of said moveable member.

4,265,468

INFLATABLE RESTRAINT SYSTEM

Donald H. Suszko, Warren, and John F. Zens, Algonac, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 3, 1979, Ser. No. 54,633
Int. Cl.³ B62D *21/08*
U.S. Cl. 280—729 **4 Claims**



1. In combination with a vehicle body including a seat having a seat cushion and a seat back for supporting a driver, a center seat occupant and a right-hand seat occupant in seated positions, an instrument panel having a front surface juxtaposed to the seat back and torsos of the seated occupants, an inflatable restraint system for said center seat occupant and said right-hand seat occupant, said inflatable restraint system being located in said instrument panel substantially opposite

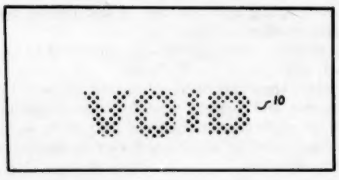
said right-hand seat occupant and comprising a housing fixedly mounted to said instrument panel, a gas generator carried by said housing and including a diffuser of a predetermined length with the longitudinal axis thereof being disposed transversely of the vehicle body, an inflatable cushion attached to said diffuser, said diffuser having a plurality of openings for allowing gas to flow into said inflatable cushion for inflating the latter whereby said inflatable cushion assumes a position for receiving impact of said center seat and right-hand seat occupants' torsos, said inflatable cushion having a transverse length substantially greater than the longitudinal length of said diffuser, and expandable baffle means made of a flexible material located within said inflatable cushion and positioned in the path of gas flow from said diffuser, said baffle means having openings at the opposite ends thereof and being spaced from said diffuser and having a transverse dimension substantially equal to the length dimension of said diffuser so as to cause the gas flowing from said diffuser to be directed sideways to fill the side portions of said inflatable cushion to quickly locate said inflatable cushion in front of said center seat occupant.

4,265,469

PROTECTED DOCUMENT AND METHOD OF MAKING SAME

William H. Mowry, Jr., Ionia; Michael J. McElligott, Rochester; Victor J. Tkalenko, Jr., Rochester, and Joseph Baran, Rochester, all of N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed May 18, 1977, Ser. No. 798,219
Int. Cl.³ B42D *15/00*
U.S. Cl. 283—8 B **14 Claims**



1. A security document adapted for use with a xerographic color copier having a lens reproduction system which has a reproduction density threshold which at normal operator accessible copier settings reproduces dots of a tone density which are larger than the reproduction density threshold and which does not resolve and consequently does not reproduce dots of a tone density which are smaller than the threshold, the security document preventing the faithful reproduction of all portions of the original image printed on the surface thereof on copies made at the normal operator accessible copier settings on said color copier and which instead, when copied using said lens reproduction system, is reproduced with a warning mark which is part of the original printed image on the document, the appearance of which warning mark indicating that the copy is not the original security document, said security document comprising:

a substrate; and

a security background printed on said substrate;

said security background comprising;

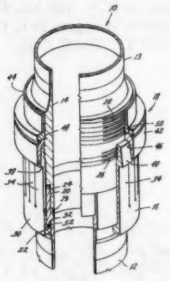
a warning mark composed of a dot pattern of a plurality of relatively large dots patterned so as to comprise said warning mark, which pattern is surrounded by a plurality of spaced smaller dots which are so small as to be unresolved by the lens reproduction system of the copier such as not to reproduce on copies made on said xerographic color copier and wherein the large dots and small dots are printed in non-cumulative mode, the dots being registered so as to be in phase with the large dots being spaced a distance which is a multiple of the distance between the small dots, and which large dots and smaller dots are camouflaged by a camouflage overlay pattern printed as a visually confusing and obscuring pattern at and between said large and small dots on said substrate such that the large and small dots appear interspersed with said camouflage patterns so as to be substantially indistinguished by the human eye and yet such that the warning mark portion may be distinguished by the color copier.

4,265,470

TUBULAR CONNECTOR

Bailey L. Danner, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Sep. 21, 1979, Ser. No. 77,643
Int. Cl.³ F16L *21/08, 37/12*
U.S. Cl. 285—39 **6 Claims**



1. A preloaded tubular connector comprising

a first tubular section having an enlargement on one end forming an external shoulder facing away from said one end,

a second tubular section adapted to engage with said first tubular section and having a plurality of exterior annular ridges spaced a short distance from said first tubular section,

an annular collet having a plurality of axially extending fingers and a base ring with an internal shoulder facing the outer ends of said fingers,

each of said fingers having an external loading shoulder facing said base ring and a plurality of internal ridges, said internal collet shoulder engaging said external shoulder of said first tubular section and the internal finger ridges mating with said ridges on said second tubular section,

the length of said fingers when unloaded being short of engagement with the mating annular ridges on said second tubular section with said base ring shoulder in engagement with said first tubular section shoulder and sufficiently long for such mating engagement when said tubular connector is preloaded,

a lock ring having a depending outer skirt surrounding the exterior of the end of said fingers to retain said finger ridges in engagement with said section ridges,

a lock nut threaded on the exterior of said second tubular section and engaging said lock ring to hold said lock ring in position surrounding the ends of said fingers,

the mating surfaces on the exterior of said fingers and the interior of said lock ring skirt being tapered at a selflocking taper angle, and

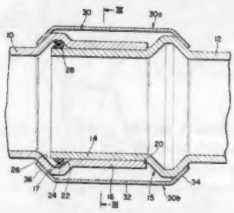
said finger external loading shoulder providing a support area for said collet and said first tubuiar member for exertion of a preload force during assembly.

4,265,471

PIPE JOINT

David D. Nash, Brownhills, England, assignor to Durapipe Limited, Staffordshire, United Kingdom

Filed Feb. 13, 1979, Ser. No. 11,854
Int. Cl.³ F16L *17/04*
U.S. Cl. 285—111 **3 Claims**



1. A mechanical pipe joint comprising,
a first pipe having an end portion defining one end of the first pipe,
a second pipe having an end portion within which said end portion of said first pipe is snugly-received, said end portion of said second pipe defining one end of said second pipe,
each said pipe having, on its exterior, a raised annular rib extending around the pipe and coaxial therewith, each said rib being at a location spaced from the end of the respective pipe defined by the respective end portion,
said first pipe having shoulder means on its outer surface adjacent the respective rib for positioning the terminal end of said second pipe and thereby limiting movement of the first and second pipes toward each other,
said joint further including a clamping ring encircling the two pipes and spanning said annular ribs of the two pipes, said clamping ring including a respective flange, extending toward the axis of the pipes and provided at each of the two axial ends of the clamping ring,
each said flange engaging that flank of a respective one of said annular ribs which is furthest from the other of said annular ribs,
each second pipe having an internal annular groove at an axial position corresponding to the external annular rib thereon,
said end portion of said first pipe extending at least partly across said annular groove in said second pipe to define an annular space between the wall of said annular groove in said second pipe and the adjacent part of the exterior of said end portion of the first pipe,
and an annular seal disposed in said annular space.

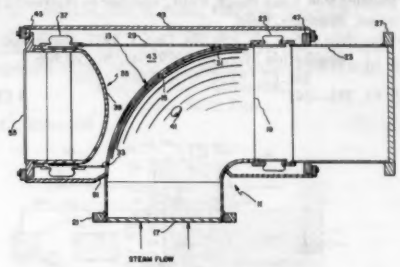
4,265,472

PIPE ELBOW CONNECTION

Peter G. Ipsen, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 24, 1979, Ser. No. 69,327
Int. Cl.³ F16L *51/02*
U.S. Cl. 285—179 **4 Claims**

1. A pipe elbow connection for a fluid conduit comprising:
a pipe elbow;
a pipe connected to one end of said pipe elbow by means of a first bellows joint;
a liner connected to said pipe elbow in fluid communication with said elbow;
a dished-head end cap connected to said liner by means of a second bellows joint, said dished-head end cap substantially located within said liner; and,
an annular wrapper positioned around said pipe elbow and said liner interconnecting the dished-head end cap with



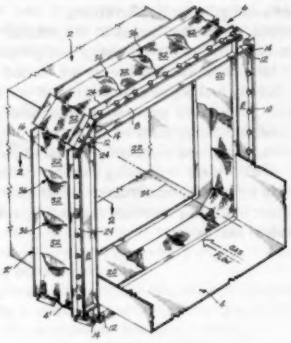
the pipe, said wrapper being movable with respect to said pipe elbow.

4,265,473

MEANS AND TECHNIQUE FOR INTERCONNECTING THE ENDS OF SPACED COAXIAL CONDUITS WITH AN EXPANSION JOINT HAVING A REDUCED AXIAL DIMENSION

Baldassare Russo, 17575-6th Pl. SW., Seattle, Wash. 98166

Filed Feb. 5, 1979, Ser. No. 9,101
Int. Cl.³ F16L *51/02*
U.S. Cl. 285—229 **39 Claims**

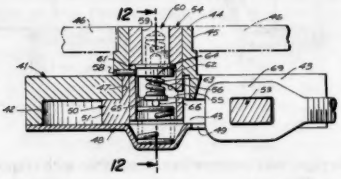


16. In combination, means defining a pair of spaced coaxial conduits which undergo relative deflection along parallels to a line crosswise the axis thereof, and a flexible expansion joint interconnecting the same, said joint comprising an annular casing which is interposed on the line of deflection in the space between the opposing ends of the conduits and connected with the ends coaxially of the conduits, the body of said casing when seen in profile to the line of deflection having opposing relatively top and bottom outlines and interconnecting sides therebetween, and said sides being divided along generally axially extending lines symmetrically arrayed about the line of deflection in spaced relationship to the outlines of the casing to form an equal number of discrete casing sections on the respective sides having substantially equal widths circumferentially of the casing, there being generally U-shaped fold-like pleats of bendably flexible material interconnecting the axial edges of adjacent sections, the folds of which project peripherally inwardly or outwardly from the body of the casing in the neutral condition of the joint and are adapted so that when the conduits undergo relative deflection as indicated, the casing accomodates to the deflection at a lesser dimension axially of the joint than that required by the diametral dimension of the joint.

4,265,474
FLUSH TYPE ROTARY DRIVE FOR LATCHES

L. Richard Poe, Long Beach, Calif., assignor to Hartwell Corporation, Placentia, Calif.

Continuation of Ser. No. 856,504, Dec. 1, 1977, abandoned. This application Mar. 14, 1979, Ser. No. 20,506
Int. Cl.[3] E05C *3/04*; E05B *17/00*
U.S. Cl. 292—241 4 Claims



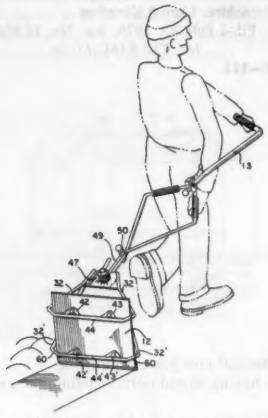
1. A rotary latch comprising:
a. a keeper means;
b. an outer sleeve;
c. an inner indicating member received within said outer sleeve, said inner indicating member being adapted for axial movement within said outer sleeve;
d. a latch arm operatively connected to said inner indicating member and arcuately movable between a secured position and a released position with respect to said keeper means;
e. a projecting element positioned within said outer sleeve and extending inwardly therefrom;
f. a retaining aperature means at the exterior of said inner indicating member for engaging said projecting element when said latch arm and keeper are in said secured position, thereby locking said latch arm and said keeper in said secured position by preventing rotational movement of said inner indicating member within said outer sleeve, and for disengaging said projecting element upon axial movement of said inner indicating member within said outer sleeve in order to permit rotational and axial movement of said inner indicating member and movement of said latch relative to said keeper.

4,265,475
SNOW HANDLING APPARATUS

Eugene R. Jarvis, 1049 Glenwood Ave., Hagerstown, Md. 21740

Filed Mar. 31, 1980, Ser. No. 135,788
Int. Cl.[3] E01H *5/02*
U.S. Cl. 294—54 15 Claims

1. A device for moving snow comprising a blade, handle frame, and intermediate frame, a third frame and a blade frame,
said handle frame, intermediate frame, third frame and blade frame being connected together and to said blade,
said handle frame having a laterally extending hand engaging member thereon,
adjustable means connecting said handle frame to said intermediate frame whereby said laterally extending hand engaging member and said handle frame can be adjusted to bring said handle to selected laterally extending positions relative to said hand engaging member,
rigid means connecting said intermediate frame to said third frame and adjustable means connecting said third frame to said blade frame whereby said blade frame with said

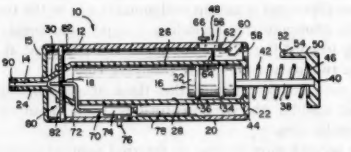


blades can be adjusted in an arc having a center at said third frame.

4,265,476
WORK-HOLDING DEVICE

Alan Elgart, R.D. 4, P.O. Box 70B, Beakes Rd., New Windsor, N.Y. 12550

Filed Aug. 13, 1979, Ser. No. 66,011
Int. Cl.[3] B25B *11/00*; B66C *1/02*; F21V *33/00*
U.S. Cl. 294—64 R 10 Claims



1. A work holding device, comprising:
an outer rigid member having disposed within;
an inner rigid member concentric with said outer member having;
an aperture on a first end of said inner member; and vacuum producing means, including a cylinder as said inner member connected to said aperture and a piston reciprocably received within said inner member for creating a vacuum at said aperture when said piston moves away from said aperture; and
illumination means disposed within said outer member for illuminating said aperture.

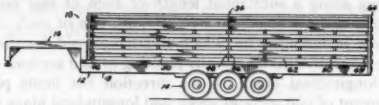
4,265,477
FOLDING SIDEBOARD GOOSENECK TRAILER

Thornton D. Hall, Rte. 2, Ft. Cobb, Okla. 73038

Filed Jul. 5, 1979, Ser. No. 55,106
Int. Cl.[3] B60P *3/04*
U.S. Cl. 296—14 5 Claims

1. A folding sideboard trailer, comprising:
trailer frame means defined by spaced-apart elongated beams interconnected adjacent their depending limit to form a trailer bed;
opposing pairs of sideboard sections hingeldy connected with said trailer box wall forming position to a trailer flatbed position overlying said trailer bed,

each section of said pairs of sections having a bottom portion hingedly connected with the upper limit of the respective said beams and having a coextensive top portion hingedly connected with the upper limit of said bottom portion for vertical pivoting movement of said top portion toward and away from said trailer bed from the plane of said bottom portion,



said hinged top portion having a vertical dimension substantially equal to the vertical dimension of the elongated beams and forming a support extending vertically between said trailer bed and said bottom portion when said bottom portion is in said flatbed position; and,

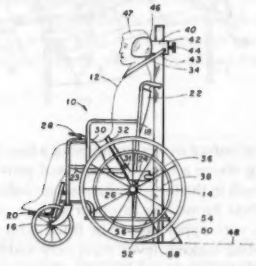
end gate means extending between said sideboard sections when the latter are in said box wall position.

4,265,478

SAFETY LOCKING MECHANISM FOR WHEELCHAIRS

Carl E. Korsgaard, Rte. 2, Smith Rd., Concord, Tenn. 37922

Filed May 9, 1979, Ser. No. 37,521
Int. Cl.³ B60N 1/02
U.S. Cl. 296—65 R **6 Claims**



1. Apparatus working in combination with a wheelchair for securing the wheelchair in a transport system, a vehicle or a structure subject to unpredictable motion, bouncing, and acceleration forces comprising;

a mounting standard securely mounted to the floor of said transport vehicle or structure, said mounting standard including a substantially horizontal bar permanently mounted thereto at a preselected distance above said floor;

a latching mechanism securely mounted to said wheelchair at said preselected location above said floor, said latching mechanism including means for mounting to said wheelchair, a latching portion and a latching tongue pivotally mounted to said latching portion such that said latching portion and said latching tongue cooperate to form a channel which channel may be selectively closed by said pivoting latching tongue such that said tongue and latching portion define an aperature suitable for receiving said horizontal bar, said latching mechanism further including a spring loaded locking pin for locking said tongue in said closed position; and

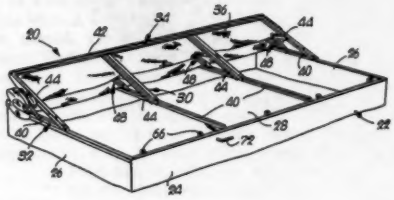
means for moving said locking pin from said locking position to release said latching tongue.

4,265,479

SIDE OPENING, SHIFTABLE COVER FOR TRUCKS OR WAGON BEDS

Larry D. Langston, 211 St. John, Vandalia, Mo. 63382

Continuation of Ser. No. 816,325, Jul. 18, 1977, Pat. No. 4,168,096. This application May 7, 1979, Ser. No. 36,866
The portion of the term of this patent subsequent to Sep. 18, 1996, has been disclaimed.
Int. Cl.³ B60P 7/02
U.S. Cl. 296—100 **7 Claims**



1. A shiftable cover assembly for covering a truck bed or the like defined at least in part by a pair of opposed, spaced, substantially parallel margins, said cover assembly comprising:

a flexible sheath presenting, when the sheath is extended to cover said truck bed or the like, a pair of interconnected, diverging, downwardly extending side panels giving a gabled configuration, the outermost side periphery of each side panel being adjacent to and extending along the length of the proximal bed-defining margin; and

means for supporting said sheath in said extended position, and for retracting the sheath as desired for opening said truck bed or the like, including—

a pair of elongated, spaced struts disposed transversely of said bed-defining margins and of lesser length than the spacing between the latter;

means operatively securing the outermost ends of said struts to a common one of the side peripheries of said sheath for movement thereof in unison;

means pivotally supporting the innermost ends of said struts at respective points between said bed-defining margins;

a pair of scissor linkages respectively disposed adjacent each strut and having a pair of diverging, downwardly extending first and second links pivotally interconnected at a point above the corresponding strut and below said sheath, when the latter is in its extended position;

means pivotally supporting the lowermost ends of said first links at respective points between the innermost ends of said struts and the other of said bed-defining margins; and

means pivotally connecting the lowermost ends of said second links to the corresponding struts at respective points between the opposite ends of the struts,

said struts being pivotally shiftable upwardly and toward said other of the bed-defining margins for retraction of said cover,

said scissor linkages being oriented such that the links thereof pivot together during said upward pivoting of said struts for folding said sheath around the scissor linkages when the sheath is fully retracted.

4,265,480
PASSIVE SEATBELT SYSTEM

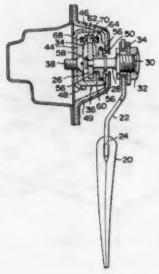
Ichiro Suzuki; Masanao Motonami, and Hisashi Ogawa, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Apr. 25, 1979, Ser. No. 33,055

Claims priority, application Japan, Aug. 17, 1978, 53-113245[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—803 **10 Claims**



1. A passive seatbelt system for a motor vehicle which includes a runner piece which anchors one end of a passenger restraining belt, a guide rail fastened to a vehicle body which guides the runner piece, a wheel which is mounted on a side of said runner piece opposite the vehicle body and which contacts said guide rail and driving mechanism which moves said runner piece along the length of said guide rail, said guide rail comprising a base part which is fastened to said vehicle body and a pair of guide arm parts coupled to said base part and which forms a runner piece housing space between said guide arm parts and said base part and said housing space houses said runner piece, said guide arm parts further including guide parts which are in contact with said wheel of said runner piece for guiding said runner piece along the guide rail.

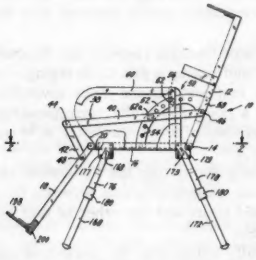
4,265,481
FOLDING BABY CARRIERS

Henry Fleischer, 18 Notch Park Rd., Little Falls, N.J. 07424

Continuation-in-part of Ser. No. 759,066, Jan. 13, 1977, Pat. No. 4,181,356. This application Jul. 24, 1978, Ser. No. 927,107

Int. Cl.³ A47C *4/00, 1/02*

U.S. Cl. 297—30 **40 Claims**



1. A collapsible three-way carrier for infants comprising, in combination, a head-back portion, a seat portion pivotally connected to said head-back portion, and a leg-foot portion pivotally connected to said seat portion, and control means connected to said head-back portion and leg-foot portion, whereby when said head-back portion is pivoted in one direction with respect to said seat portion, said control means imparts corresponding movement of said leg-foot portion in a direction opposite to the movement of said head-back portion, said control means comprising a first member and a second member pivotally connected to each other, said first member also being fixedly connected to said head-back portion and said second member also being fixedly connected to said leg-foot portion, and a longitudinal hinge disposed in at least two of said head-back portion, seat portion and leg-foot portion and running along a substantial length of each of said portions dividing said portions into two sections, one of each of said sections including a lip which overhangs said longitudinal hinge whereby said lip permits pivoting of said sections about said longitudinal hinge in one direction but limits pivotal movement of said sections about said longitudinal hinge in the other direction below the horizontal whereby said portion may be folded about said longitudinal hinges to collapse said portion for storage.

4,265,482
HEAD-REST ADJUSTING DEVICE

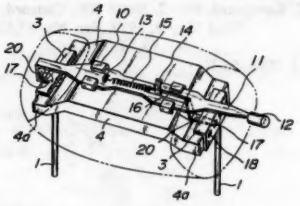
Shinichi Nishimura, Yokohama, and Satoshi Izumida, Koshigaya, both of Japan, assignors to Nissan Motor Company Limited and Ikeda Bussan Co. Ltd., both of Yokohama, Japan

Filed Aug. 3, 1979, Ser. No. 63,368

Claims priority, application Japan, Aug. 23, 1978, 53/116078[U]

Int. Cl.³ A47C *1/10, 7/12, 7/36*

U.S. Cl. 297—391 **8 Claims**



1. A head-rest adjusting device comprising a base plate fixed to stays extending above a back of a seat and provided at its ends with lower rails in the form of channels including anchoring apertures, a slide formed on its upper surface with guides and on both sides with upper rails to be fitted with said lower rails, a flat plate-like locking lever traversely slidable within said guides of said slide and having a pair of anchoring pieces extending downwardly to engage in said anchoring apertures, a spring for urging said locking lever in one direction, and a cover for covering said base plate and said slide.

4,265,483
MODULAR SEATING ARRANGEMENT

William B. Raftery, Ann Arbor; Ronald L. Whitwam, Caledonia, and Joseph M. Wisniewski, Marne, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Jun. 11, 1979, Ser. No. 47,110

Int. Cl.³ A47C *7/02*

U.S. Cl. 297—440 **23 Claims**

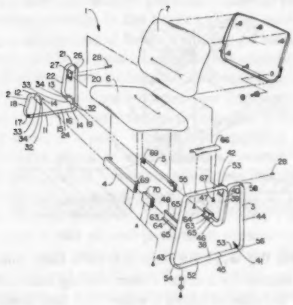
1. A modular seating system including at least one chair seat means, a pair of left and right end frames selected from arm and armless end frame alternatives, said end frames being located on either side of said seat means, and cross support means secured to and extending between said end frames and supporting said seat means, the improvement in said modular seating system comprising:

each of said right and left arm and armless end frames respectively including an identical rear frame portion defining at least a rear leg and a forwardly extending runner portion;

each said arm frame also including a forward frame portion

defining an arm, a forward leg and a rearwardly extending runner portion, said rearwardly extending runner portion and said forwardly extending runner portion having a common lateral cross sectional configuration and being secured together in abutted relationship to give the appearance of a continuous frame runner extending from said rear leg to said front leg;

each said armless end frame also including a forward frame portion defining a forward leg and a rearwardly extending



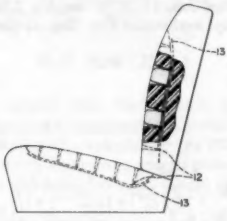
runner portion, said rearwardly extending runner portion also having a common lateral cross sectional configuration with said forwardly extending runner portion and being secured in abutted relationship to said forwardly extending runner portion to give the appearance of a continuous frame runner extending from said rear leg to said front leg whereby said arm and armless end frames can be made using a common rear frame portion and yet have an integral rather than tacked on appearance.

4,265,484

REINFORCED FOAMED BODY SUPPORT MEMBER

Robert J. Stalter, Bowling Green, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 10, 1979, Ser. No. 37,785
Int. Cl.[3] A47C *23/00*
U.S. Cl. 297—452 **10 Claims**



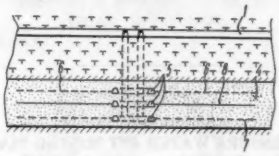
1. A polyurethane foam body support member having a mesh reinforcing member positioned at a predetermined depth below the top surface thereof and the foam has a density of less than 2.8 and less than 2.2 when the body support member is, respectively, a mattress, or a seat and a seat back, said mesh reinforcing member stopping before reaching any edge of the foam.

4,265,485

THERMAL-MINE OIL PRODUCTION METHOD

Arkady A. Boxerman, 1 Dmitrovsky proezd, 8, kv. 29; Nikolai S. Kuvshinov, ulitsa akademika Millionschikova, 11, kv. 192; Naftula L. Rakovsky, Vorobievskoe shosse, 11, kv. 31; Vladimir P. Tabakov, ulitsa Sofii Kovalevskoi, 4a, kv. 125; Lev D. Churilov, Yasenevo, 2 mikroraion, korpus 3a, kv. 685, all of Moscow; Ostap O. Sheremeta, ulitsa Mira, 1, kv. 43, Komi ASSR, Ukhta; Viktor P. Pilatovsky, 1 Dmitrovsky proezd, 8, kv. 137, Moscow; Evgeny I. Gurov, poselok Yarega, ulitsa Mira, 2, kv. 3, Komi ASSR, Ukhta; Pavel G. Voronin, poselok Yarega, ulitsa Mira, 4, kv. 6, Komi ASSR, Ukhta; Alexandr I. Obrezkov, ulitsa Oplesnina, 30, kv. 35, Komi ASSR, Ukhta; Vitaly S. Sukrushev, poselok Yarega, ulitsa Neftyanikov, 1, kv. 14, Komi ASSR, Ukhta; Vitaly S. Zubkov, poselok Yarega, ulitsa Mira, 2, kv. 12, Komi ASSR, Ukhta; Valery M. Tutarinov, poselok Yarega, ulitsa Mira, 4, kv. 3, Komi ASSR, Ukhta; Vladimir N. Mishakov, poselok Yarega, ulitsa Neftyanikov, 1, kv. 25, Komi ASSR, Ukhta; Grigory G. Miller, ulitsa Pushkinskaya, 1, kv. 4, Komi ASSR, Ukhta; Leonid M. Ruzin, poselok Yarega, ulitsa Kosmonavtov, 4, kv. 59, Komi ASSR, Ukhta, and Vladimir N. Judin, poselok Yarega, ulitsa Kosmonavtov, 5, kv. 26, Komi ASSR, Ukhta, all of U.S.S.R.

Filed Jan. 14, 1979, Ser. No. 4,274
Int. Cl.[3] E21B *43/24;* E21C *41/10*
U.S. Cl. 299—2 **14 Claims**



1. A method of thermal-mine oil production, which comprises

providing a system of underground mine workings and at least one operation gallery;

drilling at least one production well from said operation gallery into at least one of the upper and lower portions of an oil-bearing bed;

drilling at least one injection well from said operation gallery into the central portion of the oil-bearing bed;

injecting a heat carrier through said injection and production wells into the oil-bearing bed to heat the latter to a temperature at which the oil attains the required fluidity within the oil-bearing bed;

injecting a heat carrier through said injection well into the central portion of the bed, for distributing the heat carrier uniformly through the volume of the oil-bearing bed and thus forcing the oil into said production well;

collecting the oil from the oil bearing bed through said production well in said operation gallery; and

directing the oil from said operation gallery via the mine workings to the ground surface.

4,265,486

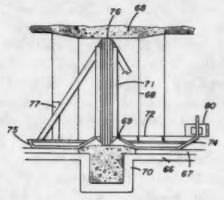
APPARATUS FOR IN-SITU RETORTING

Anthony T. Durbin, Didcot, England, and Bruce A. Kennedy, Golden, Colo., assignors to Gulf Oil Corporation, Pittsburgh, Pa. and Standard Oil Company, Chicago, Ill.

Filed Aug. 20, 1979, Ser. No. 68,228
Int. Cl.[3] E21F *5/00, 17/00*
U.S. Cl. 299—2 **15 Claims**

1. Apparatus for isolating a retort for the in-situ retorting of carbonaceous deposits from an adjacent retort in a row of retorts, each retort having an outlet at its lower end, and delivering products from the in-situ retorting in the retorts to a collection tunnel, comprising an exhaust tunnel communicat-

ing with the outlets of the retorts extending longitudinally of the row of retorts at a level below the outlet of the retort to provide communication between each of the retorts and the collection tunnel, a doorway in the exhaust tunnel between adjacent retorts, said doorway extending inwardly from the walls of the exhaust tunnel around the periphery thereof to



provide a sealing surface, a door movable in the exhaust tunnel from one doorway to an adjacent doorway, an expandable seal around the periphery of the door adapted to engage the doorway, means for introducing a fluid into the sealing means to expand the sealing means against the doorway, and means for moving the door from a doorway to an adjacent upstream doorway.

4,265,487

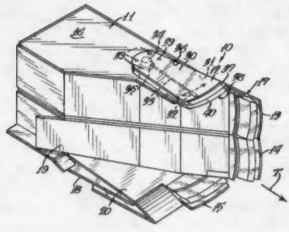
HIGH PRESSURE WATER JET MINING MACHINE

Clark R. Barker, Rolla, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Continuation-in-part of Ser. No. 894,769, Apr. 10, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,537

Int. Cl.³ E21C *25/60*

U.S. Cl. 299—34 **6 Claims**



1. A machine for mining coal and other geologic materials comprising:

a generally wedge-shaped body portion having a leading edge and adapted to be moved parallel to a working face of material being excavated;

at least one nozzle module mounted on said body portion adjacent said leading edge and containing an arcuately movable nozzle oriented to oscillate in a vertical plane for cutting a vertical slot in the material in advance of the direction of motion of said leading edge;

said module having a housing with a pair of parallel oppositely facing hardened convexly arcuate blades on the leading edge thereof defining an exit slot for water jets ejected from the said nozzle and for protecting said nozzle from contact with the material being cut.

4,265,488

TRACK ON A CONVEYOR FOR A MINING MACHINE

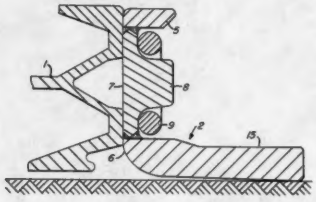
Herbert Schupphaus, Bochum, and Hugo Klimeck, Velbert, both of Fed. Rep. of Germany, assignors to Gerb. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,081

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2851941

Int. Cl.³ E21C *35/12*

U.S. Cl. 299—43 **6 Claims**



1. A track on the working face side of a face conveyor to carry support means for a drum cutter mining machine upon a mine floor for movement along a mine face, said track including a plurality of track sections each having an L-shaped cross section defining an upright limb on the working face side of said face conveyor and a generally lateral limb projecting for support upon the mine floor, a track coupling member secured within a cavity in the upright limb at each terminal end portion of a track section, each coupling member including a mounting plate section having a thickness less than the thickness of the upper limb and a coupling section projecting from said mounting plate section, coupling means to interconnect track coupling members on upright limbs of adjacent track sections on the working face sides thereof for pivotal movement of the track sections, said upper limb including a bead along the top longitudinal portion projecting above the lateral limb to overlie said coupling means and said track coupling member, said bead including an inclined surface extending to the surface of the upright limb facing toward the mine face, the upper limb of each track section merging with the lateral limb by a transition section having an inclined top surface at least partially underlying said bead and sloped downwardly toward the mine floor to the lateral limb.

4,265,489

ELECTROPNEUMATIC BRAKE FOR RAIL VEHICLES

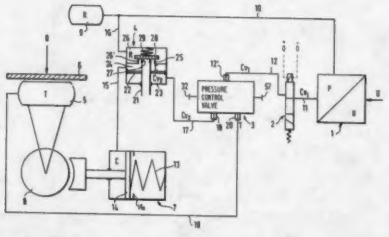
Hans-Peter Meinicke, Potomac, Md., assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 11, 1979, Ser. No. 2,961

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1978, 2801778

Int. Cl.³ B60T *13/74*

U.S. Cl. 303—3 **13 Claims**



1. In an analogue controlled electro-pneumatic brake partic-

ularly for rail vehicles wherein an operator selected electrical brake signal is converted into a load-responsive pneumatic braking signal, voltage-pressure transducer means for converting an electrical brake control signal into a first pneumatic control pressure signal, pressure control valve means connected by a pneumatic line to said transducer means to be controlled by said first pneumatic control pressure signal for generating a second pneumatic control pressure singal, relay valve means connected between a source of pressure fluid and at least one brake cylinder and to said pressure control valve means to receive said second pneumatic control pressure signal for regulating pressure in the brake cylinder, said brake cylinder being a spring-loaded brake cylinder, an emergency brake valve connected in the pneumatic line between said transducer means and said pressure control valve means to interrupt the pneumatic line connected between said pressure control valve means and said transducer means in response to a faulty electrical brake control signal, means for supplying a pneumatic load-responsive signal to said pressure control valve means, said pressure control valve means being monitored by said pneumatic load-responsive signal such that in response to a pneumatic load-responsive signal and a faulty electrical brake control signal a said second pneumatic pressure control signal is supplied to said relay valve means to brake the vehicle as a function of its load and to avoid overbraking, said relay valve means introducing a load-responsive residual pressure into said spring-loaded brake cylinder, only in the absence of a pneumatic load-responsive signal will said pressure contr_l valve means supply a second pneumatic control pressure signal to said relay means in response to which said relay means independent of the vehicle load regulates the pressure in the brake cylinder to apply full braking with maximum braking force to said spring-loaded brake cylinder.

4,265,490

PRESSURE CONTROL VALVE FOR A VEHICLE HYDRAULIC BRAKE SYSTEM

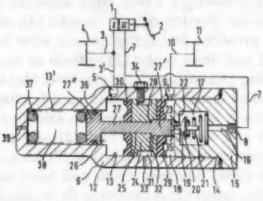
Jochen Burgdorf, Offenbach am Main, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Jul. 26, 1979, Ser. No. 61,110

Claims priority, application Fed. Rep. of Germany, Aug. 21, 1978, 2836453

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—6 C **6 Claims**



1. A pressure control valve for a vehicle hydraulic brake system including a first brake circuit connected between front wheel brake cylinders of a vehicle and one pressure chamber of a tandem master cylinder and a second brake circuit associated with rear wheel brake cylinders of said vehicle comprising:

a housing having a longitudinal axis and a first bore coaxial of said axis;

a pressure chamber disposed in said first bore adjacent one end thereof coupled to said one chamber;

a regulator inlet chamber disposed in said first bore adjacent the other end thereof coupled to the other chamber of said master cylinder;

a regulator outlet chamber disposed in said first bore spaced from and communicating with said regulator inlet chamber through a fluid passageway within said first bore coaxial of said axis, said regulator outlet chamber being coupled to said rear wheel brake cylinders;

a valve having a closure member disposed in a controlling relationship with said fluid passageway;

an annular piston disposed in said first bore slidable therein between limits, said annular piston having one annular surface thereof providing a boundary for said regulator oulet chamber and subject to regulated pressure of said second brake circuit, the other annular surface thereof providing a boundary for said pressure chamber and subjected to pressure of said first brake circuit, and a second bore in said annular piston coaxial of said axis; and

a control piston preloaded by a spring extending through and slidable in said second bore having one end thereof in a controlling relationship with said closure member and bearing on said annular piston in the direction of said spring, and the other end thereof bearing against said spring and having an annular surface providing the other boundary for said pressure chamber and being subjected to pressure of said first brake circuit.

4,265,491

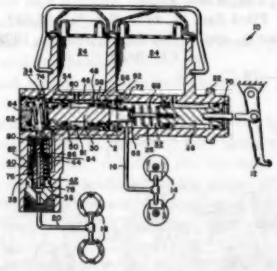
MASTER CYLINDER AND SLEEVE FOR CONTROLLING A PROPORTIONING VALVE

Paul B. Shutt, St. Joseph, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 4, 1979, Ser. No. 81,721

Int. Cl.³ B60T *13/00*

U.S. Cl. 303—6 C **16 Claims**



1. A master cylinder comprising a housing defining a reservoir, said housing furter defining a bore for movably receiving a pair of pistons, the pair of pistons cooperating with the housing to substantially define a pair of pressure chambers communicating with brake circuits, one of the pair of pressure chambers communicating with a valve assembly, said valve assembly being responsive to a predetermined pressure level within said one pressure chamber to vary fluid communication from the one pressure chamber to one of the brake circuits, said valve assembly also communication with said reservoir, and a sleeve slidably and sealingly engaging said housing, said sleeve having a bore sealingly and slidably receiving one of the pair of pistons, said sleeve being movable in response to a pressure differential between the pair of pressure chambers to close said communication of said valve assembly with said reservoir so as to deactivate the valve assembly.

4,265,492

BRAKING APPARATUS FOR VEHICLES

Hans Pöllinger, Munich, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed May 8, 1979, Ser. No. 37,128

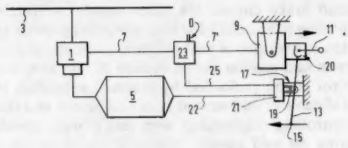
Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820921

Int. Cl.³ B60T *11/24*

U.S. Cl. 303—14 **7 Claims**

1. A braking apparatus for vehicles comprising a service

brake having a fluid pressure operated brake cylinder, control device means connected to said brake cylinder for controlling said brake cylinder, an actuating member extending from said brake cylinder and adapted to be connected to a braking member, a selectively operable parking brake, a lever operatively connecting said parking brake and said service brake actuating member, a switching device connected to said control device



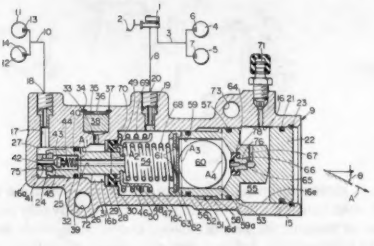
means to control the admission of fluid pressure to said brake cylinder, means for defining a bearing of said lever on said switching device, said switching device being actuated by a reaction force acting upon said bearing means through said lever when the reaction force exceeds a predetermined level such that a predetermined braking force is generated by the parking brake when said parking brake is actuated to a locking position.

4,265,493

BRAKE FLUID PRESSURE CONTROL VALVE RESPONSIVE TO DECELERATION

Tanaka Ryuichi, Yokosuka, Japan, assignor to Nippon Air Brake Co., Ltd., Kobe, Japan

Filed Jun. 21, 1979, Ser. No. 50,682
Claims priority, application Japan, Jun. 29, 1978, 53-79164
Int. Cl.³ B60T *8/14*
U.S. Cl. 303—24 C **20 Claims**



1. A brake fluid pressure control valve responsive to deceleration comprising:

(A) a main body having a cylindrical bore;

(B) a first piston slidably fitted to said cylindrical bore;

(C) a second piston having a hollow, slidably fitted to said cylindrical bore;

(D) a first fluid pressure chamber formed between said first and second pistons in said cylindrical bore;

(E) a second fluid pressure chamber formed at the opposite side of said first piston to said first fluid pressure chamber in said cylindrical bore;

(F) a third fluid pressure chamber formed at the opposite side of said second piston to said first fluid pressure chamber in said cylindrical bore;

(G) a first passage through which said first and second fluid pressure chamber communicate with each other;

(H) a second passage through which said first and third fluid pressure chambers communicate with each other, said second passage including said hollow of the second piston;

(I) a first valve member for opening and closing said first passage;

(J) a second valve member responsive to deceleration, for opening and closing said second passage, arranged in said hollow of the second piston;

(K) a first spring extending between said first and second pistons, for urging said first piston from the side of said fluid pressure chamber to the side of said second fluid pressure chamber and urging said second piston from the side of said first fluid pressure chamber to the side of said third fluid pressure chamber; and

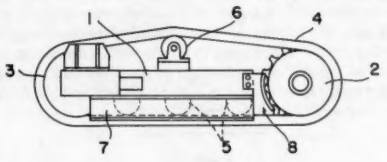
(L) a second spring extending between said main body and said first piston, for urging said first piston from the side of said second fluid pressure chamber to the side of said first fluid pressure chamber, whereby said second passage is closed by said second valve member responsive to deceleration when said deceleration has reached a predetermined valve.

4,265,494

CRAWLER TRAVELLING APPARATUS

Yoshitaka Matsubara, Osaka; Shizuo Shimoie, Sakai; Takao Watanabe, Osaka, and Yoshio Tomiyama, Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Mar. 20, 1979, Ser. No. 22,267
Claims priority, application Japan, Apr. 4, 1978, 53-44722[U]
Int. Cl.³ B60S *1/66*
U.S. Cl. 305—12 **7 Claims**



1. A crawler travelling apparatus comprising: a take-up wheel (3) and a drive wheel (2) disposed forwardly and rearwardly of a frame (1) respectively, a crawler (4) entrained about said two wheels (2) (3) and having a series of crawler links (4*a*) upstanding on an inner surface thereof, said two wheels (2) (3) being located inwardly with respect to said links (4*a*), guide wheels (5) disposed under said frame (1), adapted to guide a lower portion of said crawler (4), a main earth and sand fending cover (7) having a lower edge adjacent to an upper surface of the lower portion of said crawler (4), wherein: said main cover (7) provides an interval in side view between one end thereof and said drive wheel (2) to form an earth and sand discharge opening (A) with said crawler links (4*a*) at an inward side thereof, and an auxiliary earth and sand fending cover (8), said auxiliary cover is disposed between said one end of the main cover (7) and said drive wheel (2) and at an inward position with respect to said main cover (7) for covering said interval in side view, whereby earth and sand inadvertently entering said main cover (7) is caused to flow out of said opening (A) outwardly of said auxiliary cover without reaching said drive wheel (2) and said drive wheel (2) is positively protected by said auxiliary cover (8) from intrusion and accumulation of the earth and sand.

4,265,495

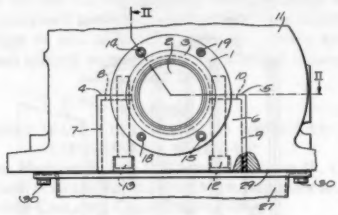
ENGINE BLOCK AND CRANKSHAFT BEARING SEAL

Robert R. Backlin, Dolton, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 20, 1979, Ser. No. 68,173
Int. Cl.³ F16C *9/02, 35/02*
U.S. Cl. 308—23 **10 Claims**

1. A main bearing and crankshaft seal assembly comprising, a housing forming a bearing support, a crankshaft, a bearing cap, bearing shells received in said housing and bearing cap forming a journal for said crankshaft when said bearing cap is fastened to said housing, lateral and horizontal interfaces be-

tween said bearing cap and housing and extending to a point adjacent said crankshaft defining seal grooves, linear seals received in said seal grooves, a seal carrier ring embracing said crankshaft, an inner peripheral seal sealing said seal carrier ring



with said crankshaft, an outer peripheral seal on said seal carrier ring sealing said seal carrier ring with said bearing cap and said housing and engaging said linear seals to provide a continuous seal around the crankshaft and said bearing cap for said bearing assembly.

4,265,496

APPARATUS FOR LONG-TERM BEARING LUBRICATION

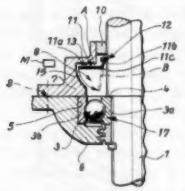
Wolfgang Kofink, Aichwald, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 22, 1979, Ser. No. 5,489

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1978, 2808698

Int. Cl.[3] **F16C** *33/66*

U.S. Cl. 308—122 **9 Claims**



1. An apparatus for long-term lubrication of a bearing (**3**) connecting a rotary shaft (**1**) and a stationary part (**6**), comprising:

a housing (**7**) for holding said bearing and for defining a lubricant reservoir (**8**) to retain lubricant therein communicating with said bearing (**3**); and

an elastic movable lubricant transport element (**11**), disposed within said reservoir and being capable of movement between at least a first, preparatory position (A) and a second, rest position (B), movement of said lubricant transport element between said first position (A) and said second position (B) being in a direction to move and transport lubricant by engagement of said transport element with lubricant in the reservoir from said reservoir (**8**) toward said bearing (**3**), said transport element being subjected to application of a moving force which depends on the rotation of the shaft.

4,265,497

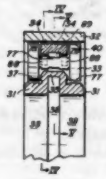
RADIAL BEARING

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Continuation-in-part of Ser. No. 765,221, Feb. 3, 1977, Pat. No. 4,193,336, which is a continuation-in-part of Ser. No. 528,346, Nov. 29, 1974, Pat. No. 4,037,523. This application Feb. 16, 1979, Ser. No. 12,625

Int. Cl.[3] **F16C** *19/26, 33/36*

U.S. Cl. 308—215 **7 Claims**



1. A radial bearing including an inner ring, an outer ring, at least one cylindrical inner face on said outer ring, outer face means on said inner ring, and rolling members between said rings for rolling along said inner face and along portions of said outer face means for revolvingly bearing one of said rings on the other of said rings,

wherein said inner ring includes a medial portion,

wherein said medial portion is provided between two end portions,

wherein said end portions have outer faces of equal radii around a common axis,

wherein said medial portion extends radially outwardly beyond said end portions,

wherein said rolling members include bearing portions located radially of said outer faces,

wherein said bearing portions of said rolling members are able to engage and to roll along said faces,

wherein said inner ring is hollow and has inner face means,

wherein a radially extending annular groove is provided in the said medial portion of said inner ring, extending radially outwardly beyond said inner face means into said inner ring,

wherein a retainer is provided between said rings,

wherein said retainer has radially directed recesses,

wherein said members are guided in said recesses of said retainer,

wherein one group of said members is located radially of one of said outer faces and another group of said members is located radially of an other of said outer faces,

wherein said medial portion has a medial outer face,

wherein said retainer has a medial inner face, and

wherein said medial inner face is guided on said medial outer face.

4,265,498

THRUST BEARING

Carl T. Luce, Thousand Oaks; Edwin L. Banks, Jr., Lake View Terrace, and Terrence P. Dowell, Van Nuys, all of Calif., assignors to Barry Wright Corporation, Watertown, Mass.

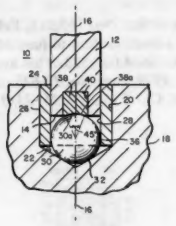
Filed Apr. 6, 1979, Ser. No. 28,046

Int. Cl.[3] **F16C** *19/50*

U.S. Cl. 308—230 **10 Claims**

1. A thrust bearing assembly for an end of a shaft for supporting the shaft for rotation about its longitudinal axis comprising a ball bearing confined in concentric relation with the end of the shaft and a part recessed into the end of the shaft which rests against the ball bearing characterized in that the part at high pressure functions as a solid lubricant and at low pressures functions as a solid, thus maintaining substantially the

same efficiency throughout the range of loading and velocity of rotation to which the structure is subjected, and wherein the



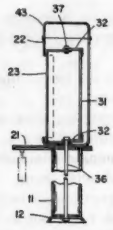
part contains a recess having a radius of curvature corresponding to that of the ball bearing.

4,265,499

PROTECTIVE TELEPHONE STAND

Rollie B. Nawman, Pleasant Hill, Calif., assignor to Benner-Nawman, Inc., Pleasant Hill, Calif.

Filed Aug. 30, 1979, Ser. No. 70,970
Int. Cl.³ A47B *81/06*
U.S. Cl. 312—100 **6 Claims**



1. A protective telephone stand, including an upwardly extending tubular base member, an upper tubular member secured atop said base member and aligned therewith, a window disposed in said upper tubular member, a curved door disposed in said window in said upper tubular member, pivotting bracket means extending from said door to permit said door to be rotated to occlude or open said window, support means in said upper tubular member for supporting and retaining a telephone instrument, a laterally extending shelf member interposed between said base member and said upper tubular member, and tie rod means extending through and joining said upper tubular member, said pivotting bracket means, said support means, said shelf member, and said base member in compressive fashion.

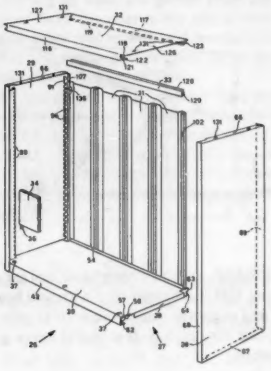
4,265,500

METAL FURNITURE IN SECTIONAL UNITS

Marcello Berton, Ronchi di Massa, and Pietro Ceccarelli, Massa, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea Turin, Italy

Filed Jun. 19, 1978, Ser. No. 916,838
Claims priority, application Italy, Jul. 4, 1977, 68541 A/77
Int. Cl.³ A47B *87/00*; F16B *12/00*
U.S. Cl. 312—107 **16 Claims**

1. A metal furniture comprising a series of parts assembled together, wherein two of said series of parts include coupling means for coupling said parts together upon relative rotation thereof, alignment means comprising complementary elements for determining a fixed predetermined relative angular position of said two parts when they are assembled and locked together, locking means movable from an initial position corresponding to an engaged relative angular position of said two parts near said predetermined angular position, to successive locking positions in which said locking means locks said two parts together with the complementary elements in engagement with one another, and spring means for urging said locking



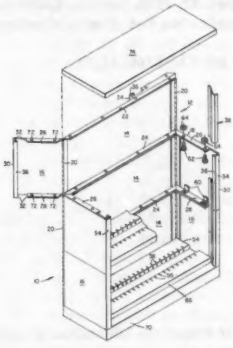
means from said initial position to said successive position for taking up any relative play between said complementary elements throughout the range of said successive locking positions between said engaged and predetermined angular positions upon assembly of said two parts.

4,265,501

MODULAR SHELVING

Charles R. Halliburton, 310A Barbara Cir., Chattanooga, Tenn. 37411

Filed Feb. 25, 1980, Ser. No. 124,143
Int. Cl.³ A47B *87/00, 43/00*
U.S. Cl. 312—108 **6 Claims**



1. A shelf cabinet comprising at least two adjacent superposed shelving modules interconnected with corresponding shelves into an upstanding structure, each of said modules comprising a rear panel and a pair of side panels, connecting means for securing a substantially vertical edge of the rear panel at each side thereof to a corresponding vertical edge of the side panels to form an open front frame, the upper and lower edge of each side panel having a substantially horizontal flange facing toward the opposite side panel and extending from adjacent said rear panel toward and spaced from the front vertical edge of the side panel, said front vertical edge of each side panel having a substantially vertical flange facing towards the opposite side panel substantially the same distance as said horizontal flanges and terminating in a lip spaced from the plane of the respective side panel, a vertically extending chan-

nel being defined within the space between said horizontal and vertical flanges and the lip and the corresponding side panel, a splicing member receivable within each channel and extending vertically into the channel of an adjacent superposed module, said splicing member having surfaces for engaging said vertical flange and lip and for engaging a horizontal flange of the adjacent superposed modules, a shelf secured to adjacent horizontal flanges of said adjacent modules and having an edge abutting said splicing member to secure it in said channel.

4,265,502

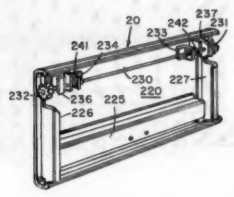
PANEL WALL SYSTEMS WITH MODULAR COMPONENT BUILD-UP

Leif Blodee, Holland; Robert L. Knapp, and Simon W. Oppenhuizen, both of Grand Rapids, all of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Division of Ser. No. 810,578, Jun. 27, 1977, Pat. No. 4,123,879. This application Aug. 18, 1978, Ser. No. 934,729

Int. Cl.[3] **A47B** *88/00, 67/02;* **E05D** *15/58*

U.S. Cl. 312—109 **14 Claims**



1. In a panel wall system, the improvement comprising a panel including a frame having upright tubular supports at the sides thereof, each defining a set of vertically spaced hanging slots; and a cabinet assembly secured to said panel comprising: first and second side panel assemblies secured to said hanging slots of said panel, said cabinet side panels being interchangeable and including a front and a rear vertical channel recess on the inner side thereof, each channel recess providing a set of vertically spaced adjustment slots, the rear edges of said cabinet side panels defining symmetrical upper locking tab means and lower locking tab means, and including a spring-urged locking member defining a bifurcated tongue for straddling the material on said frame between two adjacent hanging slots, the spacing of said locking tab means on said cabinet side panel and said locking member being such that when a side panel is engaged with said hanging slots on at least one side of said frame, said locking member extends into adjacent hanging slots and said side panel cannot be removed; a top having first and second mounting brackets at the sides thereof for connecting to the adjustment slots of said cabinet side panels; and a bottom shelf having first and second side mounting brackets connected in the adjustment slots of said cabinet side panels.

4,265,503

AIRCRAFT/PYLON MULTI-CONTACT ELECTRICAL CONNECTOR

Robert Baur, Los Angeles, Calif., assignor to Automation Industries, Inc., Greenwich, Conn.

Filed Dec. 20, 1979, Ser. No. 105,513

Int. Cl.[3] **H01R** *13/62*

U.S. Cl. 339—45 M **6 Claims**

1. A multi-contact electrical connector adapted for sequential engagement/mating/ locking of the receptacle/plug assemblies and for sequential unmating/unlocking/disengagement of the receptacle/plug assemblies, which connector comprises:

(1) a receptacle assembly including

(a) a receptacle shell provided with a receptacle barrel;

(b) electrical socket contacts carried within said receptacle barrel;

(c) recesses in the exterior surface of said receptacle barrel; and

(d) orientation means on said receptacle barrel for relative positioning of said receptacle assembly and said plug assembly;

(2) a plug assembly having a plug housing including

(a) a collet shell having

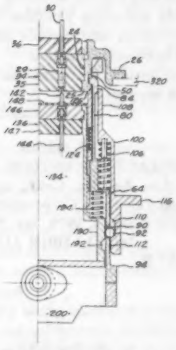
(i) a collet guide ring located at the end nearest said receptacle assembly, having orientation means at the upper end of said guide ring for relative positioning, in cooperation with said receptacle orientation means, of said receptacle and said plug assemblies;

(ii) a plurality of collet fingers terminating below said guide ring, said fingers ending in tips for meshing into said receptacle recesses to engage said receptacle assembly and said plug housing; and

(iii) a plurality of openings in said collet shell located on a common circumference of said collet shell, for positioning balls, which balls have a diameter substantially larger than the thickness of said collet shell at the locus of said ball openings;

(b) a locking/release sleeve assembly surrounding said collet shell,

(i) having spring means to move said locking/release sleeve assembly in the direcion of said collet fingertips,



said locking/release sleeve assembly overlapping the back of each of said fingertips when said fingertips mesh with said receptacle recesses, thereby giving locking engagement of said receptacle/plug assemblies;

(ii) said locking/release sleeve assembly being restrained from said overlapping movement, when said collet fingertips are outside of said receptacle recesses, by the rear of said fingertips;

(iii) having an inner annular channel for receiving a substantial amount of each of said collet shell balls and of a width such that the initial overlapping movement of said locking/release sleeve assembly stops with said balls still in the inner annular channel;

(iv) the length of said locking/release sleeve assembly providing a portion beyond the inner annular channel for covering said collet sleeve ball openings when said locking/release sleeve assembly reaches it farthest upward movement; and

(v) having trip ears for contacting tripping means;

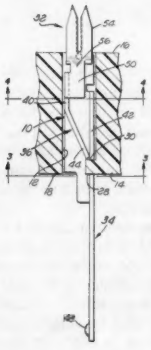
(c) a stayback sleeve assembly positioned inside of said collet shell having a stayback sleeve extending to said collet fingertips; and

(i) including spring means which urge the stayback sleeve toward said collet fingertips, and

(ii) said stayback sleeve is adapted for stop motion contact with the end of said receptacle barrel nearest said plug assembly;

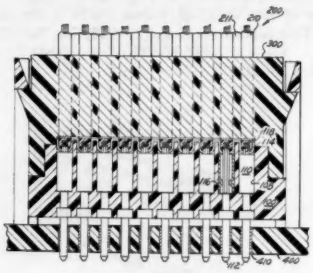
(3) said plug assembly further including a capsule assembly comprising,
(a) a plug contact insert for receiving electrical pin contacts for mating with receptacle electrical socket contacts; and
(b) a plug contact shell fitting closely inside said plug housing
(i) for carrying said plug contact insert at one end;
(ii) providing access to the rear of said plug contact insert;
(iii) providing contact surface for a backshell cam assembly to move said capsule assembly into mated relation with said receptacle assembly; and
(iv) a plurality of spring cages positioned on the exterior of said plug contact shell so as to be compressed when said capsule assembly is moved into mated relation;
(4) said capsule assembly further including a receiver sleeve positioned closely inside said collet shell,
(a) having an outer annular channel for receiving a substantial width of said collet shell balls;
(b) positioned so that the outer annular channel is juxtaposed with said collet shell ball openings and with said locking-/release sleeve assembly covering said collet sleeve ball openings, when the capsule assembly is moved to mated relation; and
(c) spring means for compression by said capsule assembly movement, for later imparting reverse movement to said receiver sleeve;
(5) a backshell cam assembly below said capsule assembly for movement of said capsule assembly into mated relation, said cam assembly including yieldable cam means to limit upward movement of said capsule assembly after the mated relation has been achieved; and
(6) a mounting means to position and to maintain said plug housing on a support means.

4,265,504
CONTACT RETENTION ASSEMBLY
Edgar Burns, Los Angeles, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Sep. 4, 1979, Ser. No. 71,875
Int. Cl.³ H01R *13/432*
U.S. Cl. 339—97 R **18 Claims**



1. An electrical contact adapted to be mounted in a contact cavity in an insulator of an electrical connector comprising:
an electrically conductive body having a forward section and a generally U-shaped retention section behind said forward section;
said retention section having a generally flat, elongted base with a pair of upstanding sidewalls along the edges thereof;
a spring retention tine formed from one of said sidewalls extending rearwardly and inwardly toward the other of said sidewalls whereby the end of said tine may engage a forwardly facing corner shoulder in said contact cavity adjacent to said other sidewall; and
said other sidewall blocking said tine from extending outwardly beyond the perimeter of said U-shaped retention section, thereby protecting said tine from damage during handling of the contact.

4,265,505
ELECTRICAL CONNECTOR
Normand C. Bourdon, Sidney, N.Y., assignor to The Bendix Corporation, Southfield, Mich.
Continuation of Ser. No. 847,451, Feb. 2, 1978, abandoned. This application Apr. 6, 1979, Ser. No. 28,131
Int. Cl.³ H01R *11/20, 13/514*
U.S. Cl. 339—99 R **5 Claims**

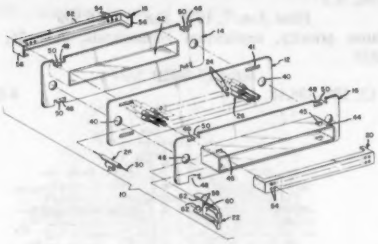


1. An electrical connector assembly comprising:
a body of insulative material including a plurality of passages extending therethrough;
a contact disposed for mating in one of said passages, said contact including a sleeve and a plurality of axially aligned contact wires of conductive material, each of said contact wires having a tapered forward end portion and a tapered rearward end portion, said sleeve being disposed medially said end portions of the contact wires and including means for securing medial portions of said wires within said sleeve to prevent the wires from displacing axially with respect to the sleeve, the forward end portions of said contact wires being disposed for mating with another contact and the rearward end portions of said contact wires being exposed for impaling an insulated conductor wire; and
means for securing the insulated conductor wire to the tapered rearward end portions of said aligned contact wires, said insulated conductor wire having a portion mounted transverse to the contact wires with the rear tapering end of the contact wires piercing through the insulation and into the conductor wire, the impaling resulting in said another contact making electrical contact with the central wire of the insulated conductor.

4,265,506
FILTERED CONNECTOR ASSEMBLY
Robert D. Hollyday, Elizabethtown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Aug. 17, 1979, Ser. No. 67,270
Int. Cl.³ H01R *13/66, 33/80;* **H03H** *7/09*
U.S. Cl. 339—147 R **13 Claims**

1. A filtered connector assembly comprising:
an elongate ground plate having filtered pin means centrally disposed therethrough and discrete longitudinal slot means adjacent opposite ends;
a pair of identical elongate mounting plates abutting opposite faces of said ground plate in an aligned relationship, and each said mounting plate having notch means adjacent each end, and integral tab means adjacent each end

directed inwardly through said ground plate slot means in complementary position with said opposite mounting plate tab means, and said tab means having remote ends



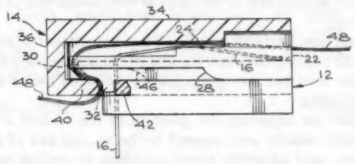
folded into said opposite mounting plate notch means and against an opposite said face of said ground plate to hold said ground and said mounting plates in said aligned relationship.

4,265,507

ELECTRICAL CONNECTOR FOR STRIP CONDUCTORS

Donald L. Johnson, Olivenhain, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Aug. 6, 1979, Ser. No. 64,002
Int. Cl.³ H01R *13/36*
U.S. Cl. 339—176 MF **4 Claims**



1. A connector for making electrical connection to a flexible conductor cable comprising:

a body member including a plurality of resilient electrical terminals supported in parallel by the body member and extending from a first surface thereof, each of the terminal members having a free end, and

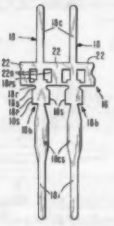
a shell which fits over the first surface of the body member and depresses a cable to which electrical connection is to be made into positive contact with the terminals, thereby depressing the free ends of the terminals against the body member, thereby providing high contact force against the cable, the shell including a top, an end molded to the top at a right angle thereto, a pair of sides molded to the top and end, and a lip parallel to the top molded to the sides and end, with the top depressing the cable into positive contact with the terminals and the lip being positioned on the surface of the body member opposite the first surface thereof, whereby the tendency of the shell to warp from forces exerted on the top by the resilient terminals is resisted by the lip being compressed against the opposite surface of the body member.

4,265,508

INTERMEDIATE-WEB HELD TERMINAL PINS

William M. Chisholm, Midlothian, Va., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,219
Int. Cl.³ H01R *13/40*
U.S. Cl. 339—221 R **16 Claims**



1. A terminal pin strip, which comprises:

a plurality of spaced elongated terminal pins;

each of the terminal pins including a body portion having an elongated stem extending in one direction from the body portion along a longitudinal axis of the terminal pin, the elongated stem having a free unobstructed end defining an extremity of the terminal pin, the body portion including a planar intermediate portion and the elongated stem having opposite essentially parallel side surfaces facing laterally in opposite directions away from each other and spaced apart essentially uniformly along the length of the stem in opposed spaced relationship to respective ones of the side surfaces of the elongated stems of adjacent terminal pins in the strip;

lateral projections formed integrally with the planar intermediate portion of each pin in the plane of the planar intermediate portion on opposite sides of the pin, at least one of the lateral projections including a shoulder which projects laterally beyond an adjacent one of the essentially parallel side surfaces of the elongated stem in the direction in which the one side surface faces laterally away from the other side surface; and

a plurality of pin-linking webs, each web being formed integrally with and extending between the lateral projections of the planar intermediate portions of an associated adjacent pair of terminal pins.

4,265,509

HIGH SPEED HOLOGRAPHIC OPTICAL PRINTING SYSTEM

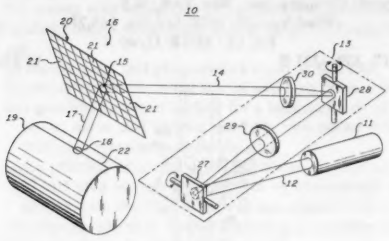
Donald H. McMahon, Carlisle, Mass., assignor to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 810,245, Jun. 27, 1977, abandoned.
This application Jan. 10, 1979, Ser. No. 2,475
Int. Cl.³ G03H *1/30*; B41B *13/00*
U.S. Cl. 350—3.78 **5 Claims**

1. An apparatus for projecting characters along recording lines of a continuously rotating photoconductive drum comprising:

an array of character generating elements wherein each column of elements corresponds to a preassigned position on said recording lines whereat a character is formed when an element in said column is illuminated by a substantially collimated light beam, said array constructed and arranged such that said character generating elements in each column are positioned to provide characters along a slanted print line to provide compensation for said continuous rotation of said photoconductive drum thereby establishing non-slanted recording lines;

means for directing a light beam to be incident to a selected element in a selected column; and



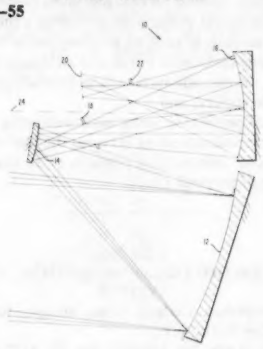
means positioned between said directing means and said array of image generating elements for substantially collimating said incident light beam.

4,265,510

THREE MIRROR ANASTIGMATIC OPTICAL SYSTEM

Lacy G. Cook, Hawthorne, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 16, 1979, Ser. No. 39,530
Int. Cl.[3] G02B *17/00*
U.S. Cl. 350—55 **18 Claims**



1. A three mirror anastigmatic optical system comprising:

a primary mirror defining an optical axis, said primary mirror having a conic ellipsoid reflective surface on one side of said optical axis;

an image surface on the other side of said optical axis;

a secondary mirror having a conic hyperboloid reflective surface which is tilted and decentered with respect to said optical axis; and

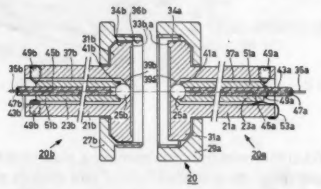
a tertiary mirror having a conic ellipsoid reflective surface which is tilted and decentered with respect to said optical axis, said primary, secondary and tertiary mirrors having surfaces shaped to form an image of an object at said image surface, said optical system being off-axis in aperture and field to determine said positions of said primary mirror and said image surface.

4,265,511

DETACHABLE CONNECTOR FOR OPTICAL FIBRES

Antonius J. A. Nicia, and Cornelis J. T. Potters, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,539
Claims priority, application Netherlands, Jun. 26, 1978, 7806829
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.18 **4 Claims**



1. A detachable connector, for coupling the ends of optical fibers, comprising two connector portions, each connector portion comprising:

a housing, rotationally symmetrical about a central axis, said housing having a first end and a second end and a bore, which is coaxial to the central axis, extending from the first end to the second end, said housing further comprising a reference face at the first end, said reference face being perpendicular to the central axis, and a seat in the bore at the first end of the housing, said seat facing the second end of the housing;

a tube, rotationally symmetrical about an axis of the tube, said tube having a first end and a second end and a seat, said seat being at the first end and facing away from the second end, said tube having a bore in which an end of a fiber to be coupled is secured, said tube being secured in the bore of the housing with the seat of the bush facing the seat of the housing at the first end of the housing and with the second end of the bush at the second end of the housing;

a ball lens, said ball lens being accommodated in the bore of the housing between the seat of the housing and the seat of the tube and forming a bearing between the tube and the housing;

means for adjusting the position of the second end of the tube radially with respect to the central axis of the housing, said adjusting means enabling an optical axis of the fiber secured in the tube to be adjusted at least parallel to the central axis of the housing by pivoting the second end of the tube about the ball lens; and

means for detachably connecting the connector portions to each other with their reference faces in contact.

4,265,512

OPTOELECTRONIC CONVERTING TERMINATION FOR OPTICAL-FIBRE TRANSMISSION CABLE

Bernard Chiron; Jean-Louis Foure, and Michel de Vecchis, all of Paris, France, assignors to Societe Lignes Telegraphiques et Telephoniques, Paris, France

Filed Mar. 2, 1979, Ser. No. 16,810
Int. Cl.[3] G02B *5/16*
U.S. Cl. 350—96.20 **5 Claims**

1. An optoelectronic converting termination for an n-optical fibre transmission cable including a mechanical core, a surrounding grooved sheath and a fibre laid in each groove of the sheath, the termination comprising

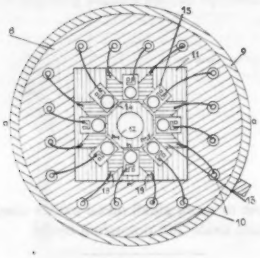
a. a base having a plurality of pins and containing a first bore;

b. an insulating substrate fixed on the base and containing a second bore extending along the axis of the first bore;

c. an annular conductive film on the substrate and having an

internal contour in the form of a convex, regular, n-sided polygon centered on the axis of the first bore; and

d. n discrete optoelectronic components, each having at least a first electrode connected to the film and a second electrode connected to one of the pins,



e. each of said components being positioned on the film at the point of intersection of extensions of two-sides of said polygon which are adjacent a common side of the polygon.

4,265,513

LIGHT SWITCH

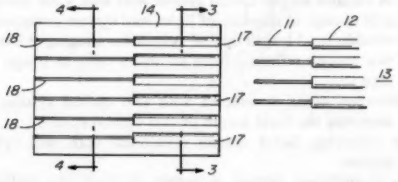
Shigeo Matsushita; Ro Ishikawa; Kazuhisa Kaede; Ikuo Mito, and Shigetoki Sugimoto, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 16, 1979, Ser. No. 67,013

Claims priority, application Japan, Aug. 17, 1978, 53-113005[U]; Aug. 30, 1978, 53-106551; Aug. 30, 1978, 53-119340[U]; Sep. 14, 1978, 53-127348[U]; Sep. 14, 1978, 53-127349[U]; Sep. 18, 1978, 53-128537[U]

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.20 **9 Claims**



1. A light switch comprising: a light-focusing transmission body, said transmission body having a central axis and having opposite end faces normal to the axis thereof and having a refractive index radially graded to decrease in proportion to the square of the distance from said axis and an axial length substantially equal to an odd multiple of one quarter of the pitch of light beam undulation in said transmission body; reflecting means provided on one of said end faces of said transmission body; a bundle of optical fibers arranged adjacent to the other end face of said transmission body in parallel relation to said axis thereof; and means for moving said transmission body relative to said bundle of optical fibers in a plane normal to the axis of said transmission body.

4,265,514

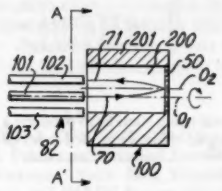
GUIDE CAPSULE FOR OPTICAL FIBER CONNECTORS

Charles K. Wellington, Tyngsboro; Mark L. Dakss, Sudbury, both of Mass., and John E. Benasutti, Oil City, Pa., assignors to GTE Laboratories Incorporated, Waltham, Mass. and Sylvania Inc., Stamford, Conn.

Filed Jun. 18, 1979, Ser. No. 49,691

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.21 **7 Claims**



1. A housing for supporting a plurality of partially jacketed optical fibers, wherein jacketed optical fibers have larger cross-sections than the corresponding optical fibers without jackets, comprising

a pair of matable members, each having a mating surface extending from a first edge to a second edge, which, when their mating surfaces are mated together, with said plurality of optical fibers, acts as said housing,

at least one of said members comprising

a like plurality of formed grooves located on a mating surface thereof extending from said first edge of such mating surface to said second edge of such mating surface,

each of said formed grooves from said first edge of such mating surface to a respective point between the two edges of such mating surface having a cross-section of a first configuration and being formed to at least partially hold on unjacketed optical fiber therein, and each of said formed grooves from said respective point to said second edge of such mating surface having a cross-section of a second configuration and being formed to at least partially hold a jacketed optical fiber therein, said cross-section of said second configuration being larger than said cross-section of said first configuration.

4,265,515

OPTICAL FIBER WAVEGUIDE WITH EFFECTIVE REFRACTIVE INDEX PROFILE

Charles K. Kao, Roanoke, Va., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 904,092, May 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 632,046, Nov. 14, 1975, abandoned. This application Dec. 11, 1978, Ser. No. 968,326

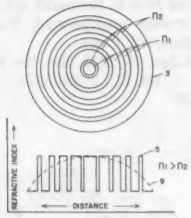
Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.33 **9 Claims**

1. An optical waveguide core having an effective graded index of refraction profile, comprising:

a plurality of first and second alternating, concentric regions of light transmissive material, each of said first regions having a first index of refraction and substantially equal thicknesses, each of said second regions having a second index of refraction lower than said first index and successively increasing thicknesses in an outwardly direction from the innermost region of said core so that the effective index of refraction correspondingly decreases outwardly

from the core center, the relationship of the thicknesses of said first and second concentric regions of light transmissive material being such as to produce a single waveguide core having an effective graded index of refraction profile.



4,265,516

DISPLAY DEVICE WITH A LIGHT VALVE OPERATED IN A TIME DIVISION MULTIPLEX METHOD

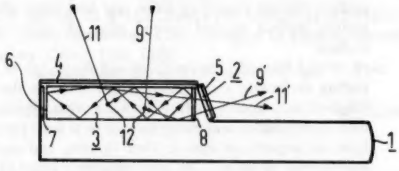
Waldemar Greubel, and Hans Krueger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,536

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1978, 2808440

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—345 **9 Claims**



1. A display device comprising a light valve display operated in a time division multiplex process, a plate-shaped body of a material having an index of refraction greater than 1 and containing fluorescent particles, said body having narrow sides, one of said sides forming an outlet window through which fluorescent light passes from said body to said light valve display, a diffusely reflective layer spaced from the opposite side of said body from said outlet window for producing focussed backscattering of fluorescent light so that the fluorescent light which is emitted through said outlet window to said light valve display is emitted over a narrow angular range, and a dielectric multiple layer adjacent said one side for further constricting the angular range of the emitted fluorescent light.

4,265,517

ACOUSTO-OPTIC DEVICE AND METHOD USING TELLURITE GLASS COMPOSITION

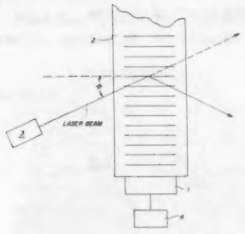
Gerald E. Blair, Pittsford, N.Y.; J. Bradford Merry, Springfield, Va., and James M. Wylot, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 11, 1979, Ser. No. 29,094

Int. Cl.³ G02F *1/11*

U.S. Cl. 350—358 **9 Claims**

1. In an acousto-optic device having an acousto-optic element acoustically coupled to means for generating acoustic waves in said element so that upon generation of an acoustic wave in said element at least a portion of a beam of electromagnetic radiation incident on said element is diffracted as it is transmitted through said element, the improvement wherein said acousto-optic element comprises an alkali metal oxide-tellurite glass composition comprising at least 92 wt % tellurium dioxide and one or more alkali metal oxides selected from the group of sodium oxide and potassium oxide.



4,265,518

VARIABLE MAGNIFICATION APPARATUS HAVING ILLUMINATION COMPENSATING ABILITY

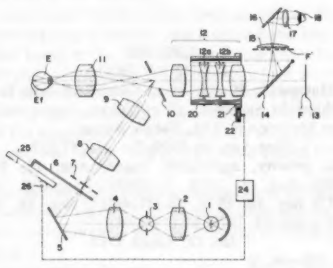
Isao Matsumura, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 919,149

Claims priority, application Japan, Jun. 30, 1977, 52-78401; May 12, 1978, 53-56257

Int. Cl.³ A61B *3/14*

U.S. Cl. 351—7 **34 Claims**



1. A variable magnification system with ability for compensation of change in quantity of light, said system comprising:

a variable focal length optical system for imaging the radiation energy reflected from an object onto an image surface;

detecting means, connected with said optical system, for detecting the focal length of said optical system;

an observing finder system connected with said optical system;

an illuminating system including at least one radiation source, for illuminating the object; and

control means driven in response to said detecting means and adapted for controlling energy entering the image surface of said optical system.

4,265,519

WIDE-ANGLE OPHTHALMOSCOPE

Oleg Pomerantzeff, Brookline, Mass., assignor to Retina Foundation, Boston, Mass.

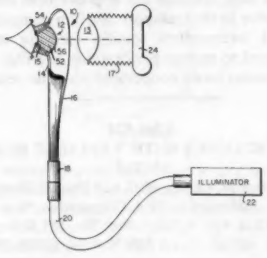
Filed Sep. 25, 1972, Ser. No. 292,150

Int. Cl.³ A61B *3/10*

U.S. Cl. 351—16 **30 Claims**

1. An ophthalmoscope comprising a lens through which the interior of an eye can be viewed and a plurality of light-guiding

optical fibers positioned in relationship to said lens so as to form a circular pattern of fibers around said lens, said fibers being positioned in relationship to said lens to prevent said fibers from intruding into the solid angle of the image of the retina from the posterior pole to the equator and with the tips of said fibers that face a patient when the ophthalmoscope is in use forming a ring of a pre-determined radius, said pre-determined radius of said ring formed by said tips and the position-



ing of said fibers in relationship to said lens being calculated to maximize the illumination of the interior of an eye with light traveling through said fibers, prevent blockage of an image of the interior of an eye seen by a viewer when looking through said lens and reduce the amount of reflection of the image of said fiber tips caused by the crystalline lens of the eye being viewed to enable an observer to view a retina from the posterior pole to the equator as a single image.

4,265,520

FOCUS DETECTING DEVICE IN SINGLE LENS REFLEX CAMERA

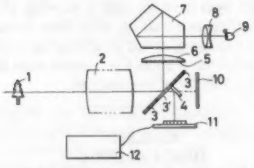
Seijiro Tokutomi, Tokyo; Masao Jyojiki, Tsurugashima, and Kazuo Nakamura, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 964,110

Claims priority, application Japan, Nov. 28, 1977, 52-142464; Nov. 28, 1977, 52-142465

Int. Cl.[3] **G03B** *3/10*

U.S. Cl. 354—23 D **16 Claims**



1. A focus detecting device in a single lens reflex camera comprising: a lens system, an optical image splitter for splitting an object image into various partial images, said image splitter disposed at a position optically equivalent to that of a film surface in said single lens reflex camera, photo-electric conversion means arranged into at least two rows, each row having a plurality of photo-electric conversion elements, said rows being disposed symmetrically with respect to a center line and, image projecting means for projecting said partial images onto said photo-electic conversion elements, said projecting means having an optical axis which optically corresponds to said center line, and signal processing means receiving signals from said photo-electric conversion elements for providing an output value:

$$\sum_{p=1}^{l}\sum_{m=1}^{n-p} | i_m - i'_{m+p} | + \sum_{p=1}^{l}\sum_{m=1}^{n-p} | i'_m - i_{m+p} | ,$$

said output value of said signal processing means having a maximum value when proper focus is obtained,

where: n is the number of said photo-electric conversion elements in each row, p is the parameter of the mutual positional relationship of said photo-electric conversion elements for obtaining output difference, m is the element number of said photo-electric conversion elements, i and i' are outputs corresponding to incident light quantities of photo-electric conversion elements in said rows, and l is an integer defined by $1 \leqq l \leqq (n-1)$ and in the range of p.

4,265,521

DIGITAL CONTROL CAMERA

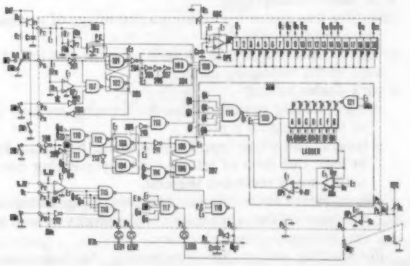
Masanori Uchidoi, Yokohama; Tomonori Iwashita, Fuchu; Tetsuya Taguchi, Kawasaki; Yukio Iura, Yokosuka; Toshikazu Ichiyanagi, Tokyo, and Hiroshi Aizawa, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1976, Ser. No. 733,794

Claims priority, application Japan, Oct. 21, 1975, 50-126559

Int. Cl.[2] **G03B** *7/08*

U.S. Cl. 354—23 D **4 Claims**



1. A digital control camera comprising:

a pulse generator;

release operation means for effecting shutter release;

counting means coupled to the pulse generator for counting pulses generated by the pulse generator when the release operation means is operated;

a first shutter release signal forming circuit conconnected to the counting means to form a shutter release signal when the value counted by the counting means reaches a first value;

a second shutter release signal forming circuit connected to said counting means to form a shutter release signal when the value counted by the counting means reaches a second value which is greater than the first value;

selecting means coupled to said forming circuits for selecting either the first or the second shutter release signal forming circuit and for making the selected circuit operative;

shutter means coupled to said forming circuits for opening in response to the shutter release signal produced either by the first or the second release signal forming circuit;

a light measuring circuit for producing an analog output corresponding to the intensity of light measured; and

an A-D conversion circuit coupled to said measuring circuit and responsive to said release operation means for converting the analog output into a digital output, said circuit becoming operative when the release operation means is operated, the time duration between the moment when the counting means starts to count and the moment when contents of the counting means reaches said first value being longer than the time duration required for an ana-

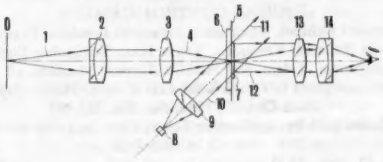
log-to-digital conversion operation of the A-D conversion circuit.

4,265,522

CAMERA HAVING A HOLOGRAPHIC INDICATOR

Kazuya Matsumoto, Yokohama; Susumu Matsumura; Noriyuki Nose, both of Kawasaki, and Youichi Okuno, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 830,036, Sep. 2, 1977, Pat. No. 4,165,930. This application Apr. 26, 1979, Ser. No. 33,687
Claims priority, application Japan, Sep. 7, 1976, 51-106886
The portion of the term of this patent subsequent to Aug. 28, 1996, has been disclaimed.
Int. Cl.[3] G03B *17/20*
U.S. Cl. 354—53 **7 Claims**



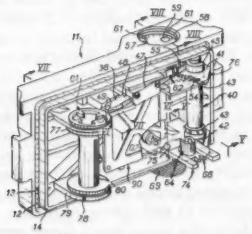
1. A camera comprising:
objective lens means for forming a first image of an object on the recording means;
exposure control means for determining the amount of exposure of the recording means, and
a view finder having
image-forming optical means for forming another image of the object on a plane,
a volume and phase type focused image hologram having at least one item of information representing one indicating mark recorded thereon,
carrier means for holding said focused image hologram on the plane of the other image of the object formed by the image-forming optical means,
illuminating means for illuminating the hologram and reconstructing the recorded mark, and
optical means for viewing the reconstructed mark overlapping the other image of the object.

4,265,523

UNDERWATER STILL CAMERA

Jean-Louis Defuans, Meylan, France, assignor to Formaplex S.A., Meylan, France

Filed May 28, 1980, Ser. No. 153,874
Claims priority, application France, Jun. 7, 1979, 79 14536
Int. Cl.[3] G03B *11/08, 19/04, 17/36*
U.S. Cl. 354—64 **13 Claims**



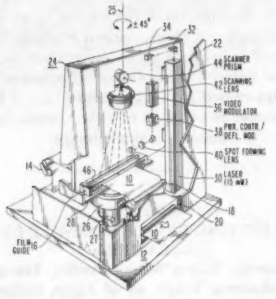
1. A "still" camera comprising a watertight body having an interior light tight chamber adapted to be back-loaded with a film, a lens closing off the front end of the light-tight chamber, a shutter adapted to selectively cover and uncover the lens, a cocking lever for bringing the shutter to its cocked position, a push rod adapted to release the shutter, the shutter, cocking lever and the push rod all being disposed outside the camera body, the camera body comprising a body member sealingly traversed by a transport spindle and a removably mounted bottom wall, a retaining pawl slidably and pivotally mounted inside the camera body and having a tooth cooperable with toothed wheel carried by the transport spindle for blocking the rotation thereof under the control of means responsive to the transport of a film, wherein the improvement comprises the means responsive to the transport of a film comprising a rotatably mounted intermediate spindle carrying at least one sprocket adapted to engage perforations of a film and at least one stop or ratchet tooth cooperable with the retaining pawl.

4,265,524

OPTICAL SCANNER WITH VARIABLE SCAN LINE ANGLE

Bertram L. Compton, Cherry Hill, and Paul B. Pierson, Delran, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 4, 1980, Ser. No. 137,824
Int. Cl.[3] G01D *15/14;* **H04N** *1/24;* **G03B** *27/68*
U.S. Cl. 354—65 **11 Claims**



11. In a system including an aircraft having camera means operative to scan a path on terrain passed over by the aircraft by scan lines which have angles within a range of about ±45 degrees from a direction perpendicular to the direction of flight of the aircraft, the improvement comprising
recorder means operative to scan a moving elongated flat web of recording material by scan lines having the same angle within a range of about ±45 degrees to the direction of movement of the web as the camera scan lines have to the direction of flight of the aircraft.

4,265,525

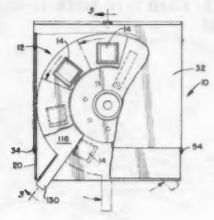
DISC CAMERA

Joseph A. Stella, Peabody, and Joseph H. Wright, Marblehead, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 26, 1979, Ser. No. 106,766
Int. Cl.[3] G03B *17/52, 29/00*
U.S. Cl. 354—76 **13 Claims**

1. A photographic apparatus comprising:
a camera having a housing to provide a light-tight chamber and an optical system for exposing a film unit to a light image of a subject to be photographed;
a movable carrier insertable into said camera, said carrier coplanarly mounting a plurality of film units each providing, upon exposure and processing, a positive image transparency, a pod of processing fluid being located on said carrier in association respectively with each said film unit, each said film unit and its respective pod of processing fluid being supported by said carrier for movement there-

with in said housing to an exposure position relative to said optical system and for subsequent movement from said exposure position to a viewing position spaced from said exposure position; and



spreader means adapted to be fixed in said housing between said exposure position and said viewing position and operative to spread processing fluid from each said pod over the exposed area of its associated film unit during movement of said associated film unit from said exposure position to said viewing position.

4,265,526

CAMERA PROVIDED WITH A DATA RECORDING DEVICE

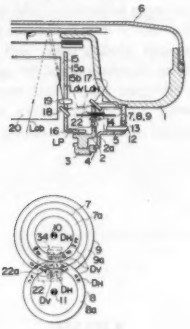
Hiroshi Ueda, Nara, and Mitsuru Saito, Kaizuka, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 20, 1978, Ser. No. 926,176

Claims priority, application Japan, Jul. 22, 1977, 52/88488

Int. Cl.³ G03B *17/24*

U.S. Cl. 354—106 **8 Claims**



1. A camera having an objective lens and a focal plane onto which objective light traversing the objective lens is focused, said camera comprising:

data carrying means carrying at least two pieces of data oriented in relatively different directions;

illuminating means including a light source for concurrently illuminating said data pieces;

light projector means for directing said focusing images of said illuminated data onto said focal plane; and

data transfer means for alternatively disabling the projection of one of said data images onto said focal plane whereby only one of the data images is incident on said focal plane;

said data transfer means including a light blocking member movable between a first position for blocking light from one of said data pieces and a second position for blocking the light from the other of said data pieces; and

a biasing member urging said blocking member to its first position, a drive member movable between a rest position and a drive position for moving said blocking member to its second position against the influence of said biasing member, an operating member movable in response to the camera shutter release operation, a spring member intercoupling said drive and operating members so as to move said drive member to its second position when said operating member is moved and a control member movable into and out of the path of movement of said drive member in response to the angular position of said camera body to respectively prevent and permit the movement of said drive member from movement of its drive position.

4,265,527

FLASH UNIT AND CAMERA

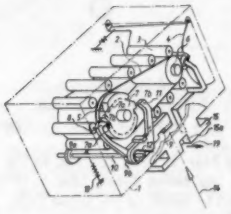
Dieter Engelsmann, Unterhaching; Karl Wagner, Munich, and Hubert Heckenberg, Holzkirchen, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed May 19, 1980, Ser. No. 150,994

Claims priority, application Fed. Rep. of Germany, May 22, 1979, 2920751

Int. Cl.³ G03B *15/03*

U.S. Cl. 354—144 **12 Claims**



1. In a multiple-lamp flash unit, a combination comprising a casing having a flashlamp firing station; transporting means for transporting a plurality of flash-lamps seriatim to said firing station; means for advancing said transporting means, including a sprocket operatively connected with said transporting means and a pawl alternately disengageable from and reengageable with said sprocket so that the latter can perform a stepwise advance of said transporting means during each disengagement of the pawl; and triggering means movable from a rest position to an operating position in which it disengages said pawl from said sprocket, said casing having an opening to afford access to said triggering means by an actuating element of a camera to which said flash unit is connectable.

4,265,528

PHOTOGRAPHIC CAMERA WITH AUTOMATIC FOCUSSING SYSTEM

Friedrich Bestenreiner, Gründwald, and Klaus Birgmeir, Munich, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,240

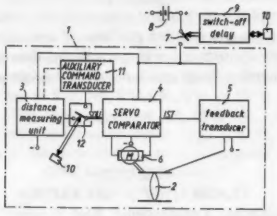
Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811279

Int. Cl.³ G03B *3/00, 7/08*

U.S. Cl. 354—195 **16 Claims**

1. In a photographic camera provided with means for initiating and terminating shooting, an improved focussing system of the type comprised of an exposure objective, drive means operative when actuated for changing the distance-setting of the exposure objective, and actuating means operative for actuating the drive means to cause the latter to change the exposure objective's distance-setting, the improvement com-

prising the further provision of return-to-start means automatically operative upon the termination of shooting for returning



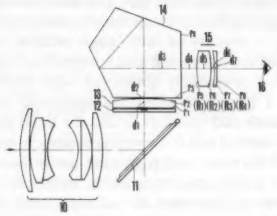
the exposure objective to a variable predetermined starting distance-setting.

4,265,529

CAMERA VIEWFINDER

Hideo Yokota, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,724
Claims priority, application Japan, Mar. 9, 1978, 53-27054
Int. Cl.[3] G03B *13/08;* G02B *3/04*
U.S. Cl. 354—224 **9 Claims**



1. A camera viewfinder comprising:

a roof type pentagonal prism for reflecting light from a scene; and an eyepiece having a positive lens arranged to face the exiting face of said pentagonal prims and, after an air space, a negative lens, said positive lens being biconvex and being made of a synthetic resin, and said negative lens being meniscus and concave toward the pentagonal prism, being made of an optical glass, said lenses fulfilling the following inequalities:

$$-1 < \left(\frac{1}{R_1} + \frac{1}{R_4}\right) \cdot f < 1.5$$

$$0.18 < \frac{\left|\frac{1}{R_3} - \frac{1}{R_4}\right|}{\left|\frac{1}{R_1} - \frac{1}{R_2}\right|} < 0.3$$

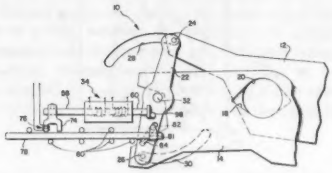
wherein R_1, R_2, R_3 and R_4 are the radii of curvature of the individual lens surfaces of the eyepiece; and f is the focal length of the eyepiece; at least one of the surfaces of said positive lens being an aspherical surface.

4,265,530

SHUTTER BLADE DRIVE SYSTEM

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jun. 5, 1979, Ser. No. 45,830
Int. Cl.[3] G03B *9/14;* H02K *41/00, 41/02*
U.S. Cl. 354—235 **15 Claims**



1. Photographic apparatus for controlling the opening and closing of a photographic shutter during an exposure interval comprising:

a photographic shutter including a pair of blades mounted for movement between a closed orientation and an open orientation in which scene light may pass to a focal plane;

means for connecting said blades for simultaneous movement between said closed and open orientations;

a linear motor adapted to be coupled to said connecting means for sequentially incrementally moving said blades from said closed orientation toward said open orientation, and for rapidly returning said blades to said closed orientation;

means for coupling said linear motor to said connecting means; and

means for generating a sequence of electrical pulses to energize said linear motor in a first directional sense to stepwise displace said blades from said closed orientation toward said open orientation and for generating an electrical pulse to energize said linear motor in an opposite directional sense to rapidly return said blades to said closed orientation thereby terminating the exposure interval.

4,265,531

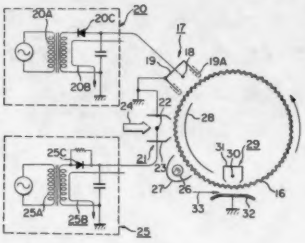
ELECTROPHOTOGRAPHY

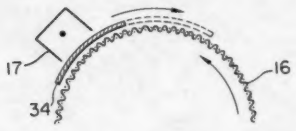
Katsunobu Ohara, Kawasaki, and Nobutoshi Yoshida, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 792,094, Apr. 29, 1977, abandoned. This application Oct. 24, 1978, Ser. No. 954,782
Claims priority, application Japan, May 19, 1976, 51-57465
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 SC **28 Claims**

1. A method of forming an image on a chargeable member by conducting an ion flow through a screen type photosensitive member having a large number of fine through openings, wherein a conductive member is disposed adjacent said photosensitive member, said method comprising the steps of forming a primary electrostatic latent image on said screen type photosensitive member, applying a corona ion flow from corona ion source means through said photosensitive member to the chargeable member, wherein said corona ion flow is modulated through said screen type photosensitive member by said primary latent image, applying a bias voltage to said screen and maintaining, at least during the application of the bias voltage

to said screen, the conductive member adjacent said screen type photosensitive member in a state to prevent the generation of discharge from one of said conductive and photosensitive members to the other.



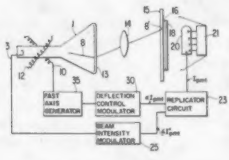


4,265,532

PHOTO PRINTING BY INTENSITY AND VELOCITY MODULATION

Walter L. McIntosh, Woodbridge, Va., assignor to LogEtronics Inc., Springfield, Va.

Filed Jun. 21, 1979, Ser. No. 50,901
Int. Cl.³ G03B *27/80*
U.S. Cl. 355—20 **42 Claims**



1. A photographic printer to expose an image receiving media from an image carrying media by scanning said image carrying media with a beamed spot of radiant energy, said printer including:

a. means for supporting said image receiving media and said image carrying media in registration, for printing,

b. means for exposing said image receiving media by scanning said image carrying media with a beamed spot of radiant energy,

c. single photosensor means for measuring the radiant energy passing through the image carrying media to generate a density related signal that is predictably related to said radiant energy,

d. replicator means for producing predictably related first and second output currents in response to the output signal received from said photosensor means,

e. modulator means responsive to said first output current to modulate the intensity of the beamed spot of radiant energy in response to variations in the first output current,

f. deflection control means responsive to said second output current to modulate the velocity or dwell period of said beamed spot of radiant energy in response to variations in the second output current,

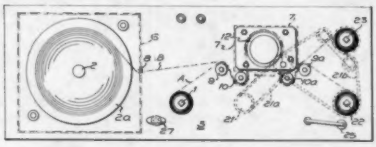
whereby both the beamed spot intensity and the spot velocity or the spot dwell time are varied in response to variations in the level of radiant energy received by said photosensor means.

4,265,533

APPARATUS FOR THE PRODUCTION OF DUPLICATE, AND OTHER FILMS FROM ORIGINAL FILMS

Robert W. Gasse, Burnley, England, assignor to Hunt & Moscrop (Textile Machinery) Limited, Lancaster, England

Filed Nov. 15, 1979, Ser. No. 94,386
Claims priority, application United Kingdom, Nov. 17, 1978, 45127/78
Int. Cl.³ G03B *27/10*
U.S. Cl. 355—110 **4 Claims**



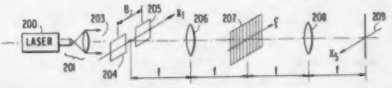
1. Apparatus for the production of duplicate micro and other films from original films comprising a base board, a spindle passing through the base board, a spool containing an original developed film mounted on the spindle, a second spindle, a magazine containing a duplicate film mounted thereon of substantially greater length than the original film, a light tight casing enclosing the magazine, a lamp-house surrounding the casing, a lamp in the lamp-house, a transparent cylinder surrounding the lamp and a slotted opaque sleeve interposed between the lamp and the cylinder, an endless belt passing over the cylinder, means for driving the endless belt, the endless belt maintaining the films in contact on the cylinder, a meter for registering the length of film remaining in the magazine, a sensor for activating the meter and a sensor for stopping the apparatus after the last image on the original film has been exposed.

4,265,534

OPTICAL APPARATUS AND METHOD FOR PRODUCING THE SAME

Paul W. Remijan, 425 Park Ave., Rochester, N.Y. 14607

Filed Dec. 23, 1977, Ser. No. 863,948
Int. Cl.³ G01B *11/24*
U.S. Cl. 356—2 **27 Claims**



1. An interferometer for producing a high-contrast, low-noise interference pattern, said interferometer comprising:

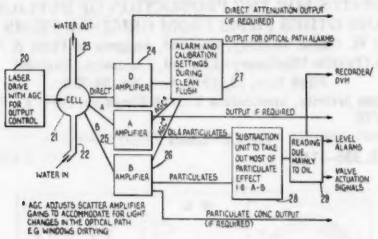
A. quasi-monochromatic, spatially coherent light source means, and

B. holographically recorded, single-frequency, optically thin, phase grating means responsive to energy from said light source means for producing a first diffraction and a second diffraction of different order and equal strength that overlap thereby to produce the high-contrast, low-noise interference pattern in the area of overlap of said first and second diffractions.

4,265,535
OIL-IN-WATER METHOD AND DETECTOR

Gillies D. Pitt, Saffron Walden, England, assignor to ITT Industries, Inc., New York, N.Y.

Filed Apr. 25, 1979, Ser. No. 33,159
Claims priority, application United Kingdom, Sep. 11, 1978, 19046/78
Int. Cl.[3] G01N *33/28, 21/00*
U.S. Cl. 356—70 10 Claims

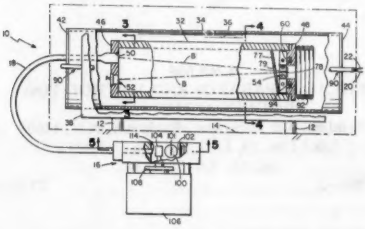

DIRECT ATTENUATION OUTPUT (IF REQUIRED)
WATER OUT
OUTPUT FOR OPTICAL PATH ALARMS
ALARM AND CALIBRATION SETTINGS DURING CLEAN FLUSH
LASER DRIVE WITH AGC FOR OUTPUT CONTROL
D AMPLIFIER
RECORDER/ DVM
DIRECT
CELL
A
A AMPLIFIER
OUTPUT IF REQUIRED
OIL & PARTICULATES
SUBTRACTION UNIT TO TAKE OUT MOST OF PARTICULATE EFFECT I-B A-B
READING DUE MAINLY TO OIL
LEVEL ALARMS
B
B AMPLIFIER
WATER IN
PARTICULATES
VALVE ACTUATION SIGNALS
* AGC ADJUSTS SCATTER AMPLIFIER GAINS TO ACCOMMODATE FOR LIGHT CHANGES IN THE OPTICAL PATH E.G WINDOWS DIRTYING
PARTICULATE CONC OUTPUT (IF REQUIRED)

1. In the scatter cell apparatus for an oil-in-water meter of the type in which oil concentration is determined by the scattering effect of the oil on an incident light beam, a scatter cell comprising: a housing having an input window for said light beam and a plurality of output windows arranged each at a different angle to said light beam at least one of, said output windows being disposed with respect to the incident beam at an angle at which the intensity of light scattered from the oil has a minimum value.

4,265,536
ELECTRICAL ZEROING OF LIGHT BEAM

William W. Carson, Mendon, and Norman F. Rolfe, Carlisle, both of Mass., assignors to Waters Associates, Inc., Milford, Mass.

Filed Jun. 25, 1979, Ser. No. 51,809
Int. Cl.[3] G01N *21/41*
U.S. Cl. 356—130 9 Claims



1. In apparatus for measuring deflection of a light beam by sensing said beam with means providing two optical measurements, and providing an electrical output dependent upon the difference between said two measurements, the instantaneous magnitude of each said measurement being dependent upon the instantaneous deflection of said beam and upon the instantaneous intensity of said beam, that improvement comprising

electrical circuitry for including in said output an offset term dependent upon a scale factor and upon the instantaneous magnitude of at least one of said measurements,

thereby making said offset term dependent upon the instantaneous intensity of said light beam, and

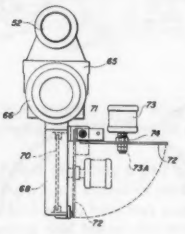
means for initially zeroing said apparatus by adjusting said scale factor so as to make said output equal to a predetermined base value,

whereby changes in said measurements due to changes in light beam intensity are offset by corresponding changes in said offset term, so as to thereby reduce the influence of beam intensity on said output.

4,265,537
VEHICLE WHEEL ALIGNMENT DIAGNOSING APPARATUS

Lee Hunter, 13501 Ladue Rd., Creve Coeur, Mo. 63141

Filed Sep. 14, 1978, Ser. No. 942,302
Int. Cl.[3] G01B *11/26*
U.S. Cl. 356—155 11 Claims



1. In vehicle wheel and wheel to body alignment diagnosing apparatus for a vehicle having an elongated body supported by first and second sets of wheels spaced longitudinally relative to the vehicle body and having alignment positions related selectively to wheel center line, body center line, and wheel thrust line references, wheel position sensing means carried by each of a first set of the vehicle wheels in position to represent the plane of wheel rotation, said sensing means having first photosensitive means positioned to face transversely between said first set of wheels, second photosensitive means positioned to face longitudinally toward said second set of wheels, and radiant energy projectors in position to direct separate radiant energy beams sweeping across paths generally perpendicular to and generally parallel with the plane of rotation of said first set of wheels such that the sweep of the perpendicular beams scan the positions of said first photosensitive means on said first wheel set, and the sweep of the beams parallel with the plane of rotation of said first set of wheels scans toward the positions of said second set of wheels; the improvement which comprises radiant energy reflective means adapted to be detachably carried by each of the second set of wheels, said detachable means including a mirror located to be substantially perpendicular to the plane of wheel rotation, means movable selectively to uncover and cover said mirror, and retro-reflector means selectively positionable on the vehicle body adjacent said second set of wheels and on said movable element, said radiant energy reflective means being scanned by the sweep of said radiant energy beams directed generally parallel with the plane of rotation of said first set of wheels; and signal generating means responsive to the scanning by said perpendicularly directed radiant energy beams of said first photosensitive means and the scanning of said radiant energy reflective means by said longitudinally directed radiant energy beams reflected back toward said second photosensitive means.

4,265,538
OPTICAL SAMPLE CELL FOR ANALYSIS OF PARTICLES IN LIQUID SUSPENSION

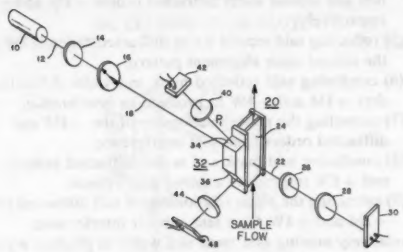
Alan L. Wertheimer, North Wales, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 18, 1979, Ser. No. 86,227
Int. Cl.[3] G01N *21/05, 15/02*
U.S. Cl. 356—246 8 Claims

1. A straight path sample cell for the optical analysis of light scattered by particles suspended in a flowing sample of

liquid by measuring the components of light scattered in three mutually orthogonal directions from an incident light beam directed in one of those directions, and polarized in another, comprising:

entrance and exit windows for said cell which are spaced to form a front and back for respectively receiving said light beam and transmitting as one of said orthogonal components the forward scattered light from the particles in said sample;



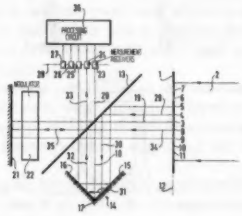
prism means having at least one of its faces optically contacting said sample along a side of said cell and at least two other faces oriented so that said other faces each pass another of said orthogonal components of the scattered light, one of which is that component in the direction of polarization.

4,265,539

DEVICE WHICH MEASURES THE MUTUAL COHERENCE FUNCTION OF A LASER BEAM

Jean-Paul Gaffard, Fontainebleau, France, assignor to Compagnie Generale d'Electricite, Paris, France

Filed Jun. 7, 1979, Ser. No. 46,293
Claims priority, application France, Jun. 16, 1978, 78 18058
Int. Cl.[3] G01B 9/02
U.S. Cl. 356—345 **4 Claims**



1. A device for measuring the mutual coherence function of a laser beam, said device including:

a plane screen constituted by a material capable of blocking the energy of the laser beam, said screen being disposed perpendicular to the axis of the beam and having $2n+1$ openings so as to pass $2n+1$ pencils of laser light taken from the beam, said openings being disposed along a straight line of said screen and including a central opening, a first group of n openings situated to one side of the central opening and a second group of n openings disposed on the other side of the central opening symmetrically in relation to the central opening, n being an integer;

a partially reflecting optical plate disposed to pass a fraction of the energy of each pencil of light therethrough and to reflect the other fraction of the energy of each pencil of light at 90 degrees parallel to said straight line;

a rectangular dihedron having opposed inner reflecting surfaces, said surfaces comprising a first surface and a second surface respectively parallel and perpendicular to the plane of the optical plate with the edge of the dihedron being perpendicular to said straight line, the reflecting surfaces of the dihedron being disposed to receive the pencils of light which are reflected by the optical plate, the pencil of light which emerges from the central opening reaching the edge of the dihedron and being returned on its own path so that part of its energy passes through the plate to form a reference pencil of light;

a plane mirror disposed to return on its own path said fraction of energy of the pencils of light which has passed through the optical plate;

a modulator for modulating the phase of said fraction of energy of the pencils of light, said modulator being situated on the path of the pencils of light after passing through the optical plate;

$n+1$ photoelectric receivers including a reference receiver disposed to receive the reference pencil of light and n measuring receivers disposed to receive respectively the n pencils of light which emerge from the openings of the first group after they have been successively reflected on the optical plate, said first surface and said second surface of the dihedron and after they have subsequently passed through the optical plate with the n pencils of light being respectively superposed on the n pencils of light which emerge from the openings of the second group having passed through the optical plate then having been reflected successively on the plane mirror and on the optical plate; and

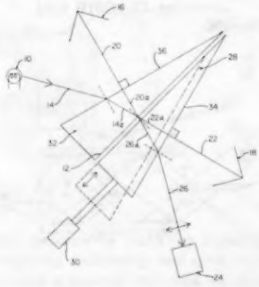
a processing circuit for determining over a predetermined time the amplitude of the signals delivered by each of the n measuring receivers and over said predetermined time the average values of the phase difference between the signals delivered by each of the n measuring receivers and the signal delivered by the reference receiver, whereby these average amplitude values and average phase values are representative of the amplitude and of the phase of the mutual coherence function relating to the points of the cross-section of the laser beam which correspond to the openings of the screen.

4,265,540

REFRACTIVELY SCANNED INTERFEROMETER

Walter M. Doyle, Laguna Beach, Calif., assignor to Laser Precision Corporation, Utica, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,287
Int. Cl.[3] G01B 9/02
U.S. Cl. 356—346 **22 Claims**



1. A spectral analysis interferometer, of the type having a first arm in which the optical path leads to a first reflector and a second arm in which the optical path leads to a second reflector, comprising:

a movable scanning prism having a wedge angle to vary its refractive path length and movable across the optical path of the first interferometer arm;

a fixed prism having a wedge angle substantially equal to

that of the scanning prism and located in the second arm of the interferometer in such a way as to substantially balance the refractive effects in the two arms when the scanning wedge is in its centered position; and

a beamsplitter surface supported on one of the prisms.

4,265,541

INTERFEROMETRIC LASER GYROMETER

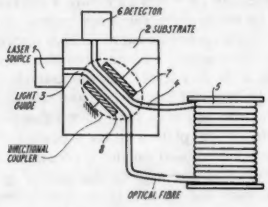
Pierre Leclerc; Claude Puech; Michel Papuchon, and Pierre Lallemand, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Nov. 17, 1978, Ser. No. 961,856

Claims priority, application France, Nov. 22, 1977, 77 35039

Int. Cl.³ G01C *19/64*

U.S. Cl. 356—350 **13 Claims**



1. An interferometric laser gyrometer comprising a laser source having an emissive face, a wound light guide having two end faces, detection means having a receiving face, and an integrated optical circuit formed on a solid substrate and having four ports, said ports having further faces in straight abutal with said faces; said integrated circuit comprising integrated waveguide means for interconnecting said four ports; said laser source supplying radiant energy to said end faces, and said detection means being fed with the sum of radiant energies emerging from said end faces; said integrated waveguide means comprising directional coupler means for preventing radiant energy emerging from said end faces from interfering with energy supplied by said laser source.

4,265,542

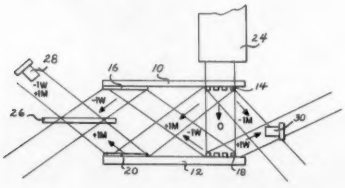
APPARATUS AND METHOD FOR FINE ALIGNMENT OF A PHOTOMASK TO A SEMICONDUCTOR WAFER

Kenneth A. Snow, San Jose, Calif., assignor to Computervision Corporation, Bedford, Mass.

Continuation of Ser. No. 848,476, Nov. 4, 1977, abandoned. This application Mar. 14, 1979, Ser. No. 20,294

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—356 **10 Claims**



4. A method for aligning a mask having first and second repetitive alignment patterns to a semiconductor wafer having corresponding first and second repetitive alignment patterns, said method comprising the steps of:

(1) initially positioning the mask in superposed, spaced relation to the wafer with at least a portion of each of said first and second mask alignment patterns overlying at least a portion of the corresponding first and second wafer alignment patterns;

(2) illuminating the first mask alignment pattern with coherent light from a source of coherent light to produce first and second mask diffracted orders, +1M and −1M, respectively;

(3) reflecting said first mask diffracted order +1M from the second wafer alignment patterns;

(4) illuminating the first wafer alignment patterns with coherent light from said coherent light source to produce first and second wafer diffracted orders +1W and −1W, respectively;

(5) reflecting said second wafer diffracted order −1W from the second mask alignment pattern;

(6) combining said reflected mask and wafer diffracted orders +1M and −1W to produce an interference;

(7) extracting the phase relationship of the +1M and −1W diffracted orders from said interference;

(8) combining said mask and wafer diffracted orders −1M and +1W to produce another interference;

(9) extracting the phase relationship of said diffracted orders −1M and +1W from said another interference;

relatively moving said mask and wafer to produce a predetermined relationship with respect to the two extracted phase relationships.

4,265,543

KERR EFFECT APPARATUS

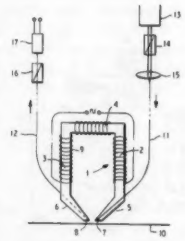
Donald J. Barclay, Winchester, and Christopher T. Prowting, Eastleigh, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1978, Ser. No. 936,417

Claims priority, application United Kingdom, Aug. 24, 1977, 35572/77

Int. Cl.³ G01J *4/04;* **G02F** *1/05*

U.S. Cl. 356—369 **12 Claims**



1. A Kerr magneto-optic effect probe having a tip portion which may be inserted into an electroplating bath or vacuum deposition chamber and positioned adjacent to a surface upon which magnetic material may be deposited, for examination thereof, comprising:

a magnetic core having adjacent magnetic pole tips for generating a magnetic field therebetween and along an adjacent surface to be examined;

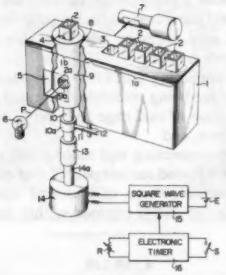
an input light path including an input light waveguide and a polarizer for directing polarized light onto the surface in the region of the magnetic field; and

an output light path including an output light waveguide and an analyzer for conducting light reflected from the surface to a light detector, at least one end of said input and output light waveguides being supported in predetermined relationship to said pole tips for common movement thereof with respect to and within an electroplating or vacuum deposition chamber.

4,265,544
LIQUID AGITATION APPARATUS FOR AN ABSORBANCE MEASURING APPARATUS

Taiichi Banno, and Hideaki Ida, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Japan

Filed Mar. 5, 1979, Ser. No. 16,959
Claims priority, application Japan, May 24, 1978, 53/70911[U]
Int. Cl.³ G01N *21/00, 21/75*
U.S. Cl. 356—427 **5 Claims**



1. A liquid agitation apparatus for an absorbance measuring apparatus, comprising:

at least one transparent reaction vessel for containing a reaction solution to be examined;

a holder for removably containing one said vessel for agitating said reaction solution contained in said one vessel for photometry, said holder being formed with opposing photometric openings for allowing a photometric radiation flux to pass through said reaction solution contained in said one vessel;

a thermostat block having means for receiving said holder, said thermostat block including means for heating said vessel;

means for vibrating said holder in order to agitate said reaction solution in said one vessel, said vibrating means being connected to said holder via a resilient joint and said holder further comprising a support shaft connected to said resilient joint; and

means for positioning said holder so that when said holder is not being vibrated, its photometric openings have a set alignment, said positioning means comprising:

a positioning member rigidly connected to said support shaft;

a stationary lug for blocking rotary motion of said positioning member past a set position corresponding to said set alignment of said holder;

and means for biasing said positioning member against said stationary lug when said holder is not being vibrated.

4,265,545
MULTIPLE SOURCE LASER SCANNING INSPECTION SYSTEM

Frank A. Slaker, Norwalk, Conn., assignor to Intec Corporation, Trumbull, Conn.

Filed Jul. 27, 1979, Ser. No. 61,451
Int. Cl.³ G01N *21/89*
U.S. Cl. 356—431 **5 Claims**

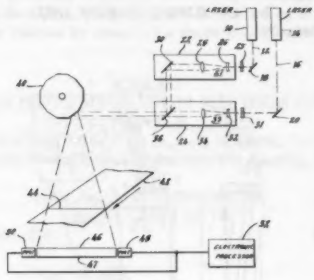
1. A multiple source laser scanning inspection system for scanning a moving web of material with a plurality of laser sources and detecting flaws in a web of moving material being inspected in accordance with the characteristics of the laser light emanating therefrom comprising:

a plurality of laser sources for generating a plurality of laser beams,

common scanning means for simultaneously scanning said plurality of laser beams across said moving web of material being inspected,

optical means for directing said plurality of laser beams onto said common scanning means,

receiver means for collecting laser beam radiation, applied by said plurality of laser beams from the web of material being inspected, and

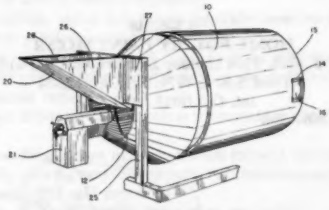


detector means coupled to said receiver means for generating signals based on the intensity of said radiation applied thereto by said receiver means, said signals including characteristics associated with each of said plurality of laser beams and said signals being used to detect and characterize flaws in said material.

4,265,546
ASPHALT-AGGREGATE DRUM MIXING APPARATUS

Robert L. Mendenhall, 1770 Industrial Rd., Los Vegas, Nev. 89102

Division of Ser. No. 1,051, Jan. 8, 1979, Pat. No. 4,219,278, and a continuation-in-part of Ser. No. 871,351, Jan. 23, 1978, Pat. No. 4,208,131, and a continuation-in-part of Ser. No. 906,734, May 17, 1978. This application Jun. 2, 1980, Ser. No. 155,502
Int. Cl.³ B28C *5/46*
U.S. Cl. 366—7 **3 Claims**



1. A continuous process for recycling asphaltic concrete composition comprising recovering said composition from a paved surface to form a material including asphaltic concrete particles which will not pass a 4" sieve, feeding said composition onto a chute and gravitationally introducing said composition from said chute into a drum having an open port at one end and a closed recovery port adjacent the opposite drum end, introducing hot gases of combustion into said open port while rotating the drum until the composition therein is at a temperature of at least 225° F., opening said recovery port and continuously recovering composition therefrom while simultaneously continuously feeding a like amount of composition onto said chute.

4,265,547

REVERSE DEGASIFICATION SCREW EXTRUDER WITH VACUUM SEAL

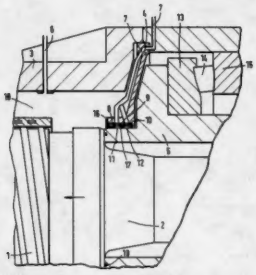
Gerhard Martin, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Fed. Rep. of Germany

Filed Jan. 5, 1979, Ser. No. 1,240

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1978, 2800632

Int. Cl.³ B29B *1/00*; B29F *3/03*

U.S. Cl. 366—79 **2 Claims**



1. A screw extruder for processing thermoplastic materials fed thereto, comprising a cylinder; a screw mounted in the cylinder; first vacuum means for applying a vacuum to the cylinder in the region where material is fed to the extruder for the purpose of reverse degasification of the material to be processed in the extruder; back pressure bearing means; a pressure member rotatable with the screw and located between said screw and said back pressure bearing means; an annular non-rotatable end member disposed in front of said rotatable pressure member relativey adjacent said screw, sealing means comprising at least two radial sealing rings surrounding the rotatable pressure member and mounted within said end member, said sealing rings being spaced axially from each other to form an annular interspace therebetween, and second vacuum means for applying a vacuum to said annular interspace, the vacuum applied to said annular interspace being higher than the vacuum applied to the cylinder for the purpose of reverse degasification.

4,265,548

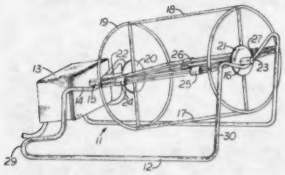
HOME ROTARY PAINT MIXER

Clarence J. Hall, 1104 Holiday La., Kewanee, Ill. 61443

Filed Sep. 6, 1979, Ser. No. 72,974

Int. Cl.³ B01F *3/10, 9/02*

U.S. Cl. 366—208 **2 Claims**



1. A rotary paint mixer comprising:

a cylindrical cage proportioned to fit quite closely about a cylindrical can that contains paint to be mixed, first and second axles connected respectively to opposite ends of said cage, said axles extending outwardly in line with the axis of said cage,

a frame supporting said cage, an electric gear-reduction motor with an output shaft connected to an end of said frame, means for connecting said first axle to said shaft, said motor being operable to rotate said cage within said frame, said second axle of said cage being rotatively supported by the other end of said frame, one of said axles being supported at a substantially higher level than the other of said axles,

said cage having a first part to which said axles are connected and a second part hinged to said first part, each of said parts being half of a cylinder with a plane side through the axis of the cylinder, each of said parts being fabricated from a plurality of spaced rods, said plane side of each of said parts being a rectangular frame having first and second side portions, said first side portions being positioned side by side,

hinge means connecting said first side portions, said second part of said cage being rotatable about said hinge means to an open position of said cage to permit insertion of a can of paint therein, and

latching means connecting said second side portions of said plane sides while said second part of said cage is rotated to a closed position where said second side portions are adjacent and said can is retained within said cage.

4,265,549

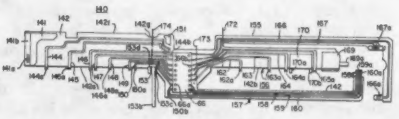
FLAT FLEXIBLE PRINTED CIRCUIT CABLE FOR A PRINT HEAD

Henry L. Cote, Bedford, N.H., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed May 21, 1979, Ser. No. 40,890

Int. Cl.³ B41J *3/12*; H05K *1/00*

U.S. Cl. 400—124 **9 Claims**



8. A thin flat flexible printed circuit cable for use with a print head assembly having a plurality of solenoid assemblies arranged in a substantially circular array, said cable comprising:

a thin flat elongated flexible insulating sheet having a plurality of flexible conductors imbedded therein;

one end of each of said flexible conductors terminating along a longitudinal side of said sheet;

each such termination comprising an exposed conductive terminal for electrical connection to each terminal of the solenoid coils of each solenoid assembly;

said flexible printed circuit cable being wrapped around said array of solenoid assemblies to position the opposite ends of said sheet substantially adjacent one another;

means for coupling said ends together to retain said sheet about said array.

4,265,550

INK RIBBON CARTRIDGE INCLUDING A MOVABLE RIBBON TENSIONING GUIDE FOR A PRINTING MACHINE

Gian P. Donnis, Montalto Dora, and Giancarlo C. Borca, Ivrea, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

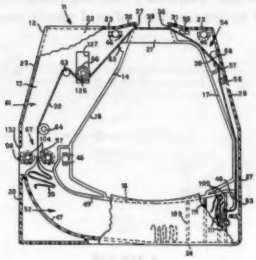
Filed Mar. 26, 1979, Ser. No. 24,051

Int. Cl.³ B41J *33/10*

U.S. Cl. 400—196.1 **12 Claims**

1. An ink ribbon cartridge for a printing machine of the type which includes a platen to support a record medium having variable thickness, a carriage movable parallel to the platen along a printing line and comprising a support member whereon the cartridge can be fitted, a needle printing head actuatable for the printing, a dragging element, and means supporting said head and said dragging element for movement

thereof with respect to the carriage perpendicular to said printing line for causing said head to advance and retract with respect to said platen but remaining at a constant distance from the record medium; said cartridge comprising an inked ribbon, a container having means housing the ink ribbon and including two guides between which passes an external length of the ribbon for engagement with the head, and a movable tensioning guide which is movably fitted onto the container between said housing means and one of said two guides, which movably



engages the ribbon and which comprises means for engaging said dragging element when the cartridge is fitted on the support member of said carriage, wherein said movable tensioning guide follows said dragging element toward the platen to pay out the ribbon to the external length as the head is advanced toward the platen and to take up slack from the external length as the head is retracted from the platen, thereby holding constant the tension and the length of said external length of the ribbon in spite of the movement of the needle printing head with respect to the support member of the carriage.

4,265,551

DRIVE FOR TRANSPORTING AND REVERSING AN INK RIBBON, AND FOR WITHDRAWING THE PRINTING HEAD IN PRINTING DEVICES

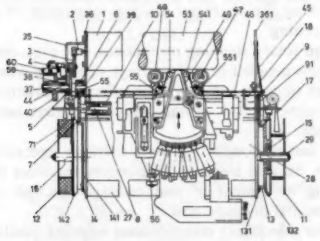
Manfred Adamek, Freusburg-Struth, and Horst Würscher, Wilusdorf, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 23, 1978, Ser. No. 918,406

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1977, 2731593; Jul. 13, 1977, 2731607

Int. Cl.³ B41J *33/44*

U.S. Cl. 400—221.1 **5 Claims**



1. A printing device which includes: an ink ribbon, a printing head, a platen and means for transporting and reversing the transport direction of said ink ribbon and for withdrawing said printing head from said platen which comprises first and second gear wheels, a control shaft fixed to each of said gear wheels, first and second gear rings on reel holders disposed on the sides of said printing device, said gear wheels alternately engaging, by sliding of the control shaft in the longitudinal direction, one of said gear rings, said device further including a cord and guide rollers on said printing head, said cord being guided over said printing head via said guide rollers, the withdrawal of said printing head being effected by the tensioning of said cord, one of said gear wheels cooperating with said gear rings on said reel holders being coupled via a first pawl-and-ratchet device to a common drive shaft, said device further including a deflection lever and a cam mechanism which includes a cam disc, said cam disc being connected to said common drive shaft via a second pawl-and-ratchet device, said first and second pawl-and-ratchet devices being arranged to drive in opposite directions, and said common shaft being drivable in a reversible manner by means of a single electric motor.

4,265,552

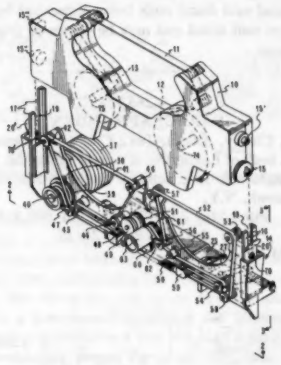
RIBBON DRIVE MECHANISM FOR HIGH SPEED PRINTER

John D. Bemis, and Willie Goff, Jr., both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 2, 1979, Ser. No. 234

Int. Cl.³ B41J *33/14*

U.S. Cl. 400—236 **6 Claims**



1. Apparatus for rotatably driving a take-up reel and a supply reel, each reel supporting a portion of an inventory of a web member running from the supply reel to the take-up reel at a constant speed differential between said respective portions of said web member comprising:

a first inelastic drive belt for peripherally non-slip driving the web portion on said take-up reel,

a second inelastic drive belt unattached to said first drive belt for peripherally non-slip driving the web portion on the supply reel,

means for driving said first belt at a constant selected speed, and

drive coupling means non-slip driven by said first belt for non-slip driving said second belt at a constant speed which is slower than said first belt,

whereby the web member between the supply reel and take-up reel is maintained under a constant strain.

4,265,553

RIBBON THREADING ASSEMBLY FOR AN IMPACT PRINTER

William A. Hatsell, Hatfield, Pa., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 833,273, Sep. 14, 1977, abandoned. This application Dec. 28, 1979, Ser. No. 107,935

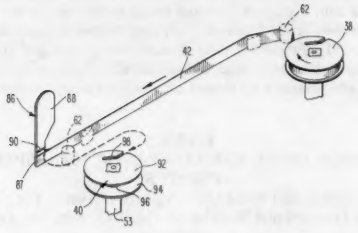
Int. Cl.³ B41J *31/02*

U.S. Cl. 400—238 **9 Claims**

1. A ribbon assembly for an impact printer comprising:

a ribbon, one end of which is stored at a ribbon storage means;

a tab having a proximate and a distal end, the proximate end being attached to the other end of said ribbon, the longitudinal dimension of said tab being substantially perpendicular to the longitudinal dimension of said ribbon; and



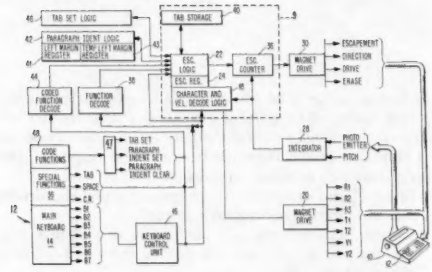
a ribbon take-up reel having flanges separated from one another by a hub, one of said flanges having a slot therein for mating with the proximate end of said tab, said proximate and said distal ends being separated by a score line whereat said distal end may be removed from said proximate end.

4,265,554

PARAGRAPH INDENT

Douglas E. Clancy, Austin, Tex.; Carl F. Johnson; William R. McCray, both of Lexington, Ky., and Danny M. Neal, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 22, 1978, Ser. No. 908,325
Int. Cl.³ B41J *25/18*
U.S. Cl. 400—316 **4 Claims**



1. A paragraph indentation control for a typewriter, said typewriter and control comprising a print point defining means movable with respect to a writing line, return means for returning said print point defining means to a line beginning position, line beginning defining means for defining the line beginning, comprising:

a keyboard line beginning control key for creating a line beginning command;

said line beginning defining means further comprising:

control means including line beginning storage means for storing an indication of said line beginning position;

a temporary line beginning storage means for storing a line beginning position and accessable by said control means;

means for indicating the position of said print point defining means;

escapement logic means for determining the difference between said line beginning indication and said print point position indication and escapement counter means for receiving said difference and controlling said return means in response to operation of said keyboard line beginning control key;

said line beginning defining means further comprising:

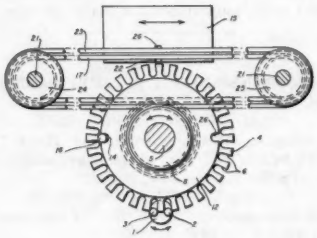
means for temporarily replacing the contents of said temporary line beginning storage means with an indication differing from that previously stored therein, in response to a control signal from said line beginning control key whereby said print point defining means is escaped directly to a print line position corresponding to the value stored in said temporary line beginning storage means in response to the operator of said return means.

4,265,555

DUAL PITCH CARRIAGE DRIVE MECHANISM

Gottfried Burkhardt, Am Bahndamm 29, 8500 Nuremberg 1, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 70,148
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1978, 2839944
Int. Cl.³ B41J *19/00*
U.S. Cl. 400—320 **6 Claims**



1. In a business machine having a carriage mounted for character spacing movement and an escapement mechanism for controlling the character spacing movement of said carriage comprising

a uniform rotary stepping mechanism,

first means coupled to said carriage operative when driven by said stepping mechanism to effect a character spacing movement of said carriage through a first incremental distance,

second means coupled to said carriage operative when driven by said stepping mechanism to effect character spacing movement of said carriage through a second incremental distance, and

means for selectively coupling said stepping mechanism to either said first or second means according to the character spacing movement desired.

said stepping mechanism comprising a Geneva movement including a pinwheel and a coacting slotted disc,

a shaft rotatably supporting said slotted disc,

said pinwheel being rotatable through a predetermined angle incident to a spacing signal and operative to rotate said slotted disc,

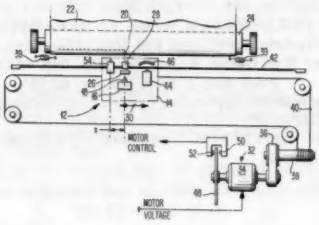
said means for selectively coupling said stepping mechanism to said first or second means comprising means on said slotted disc for engaging either said first or second means.

4,265,556

APPARATUS FOR SETTING PROPORTIONAL MARGINS BASED UPON THE WIDTH OF A SCANNED SHEET OF PAPER

Michael L. Krieg, and Paul A. Quinn, Jr., both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 21, 1978, Ser. No. 971,982
Int. Cl.³ B41J *21/02*
U.S. Cl. 400—342 **15 Claims**



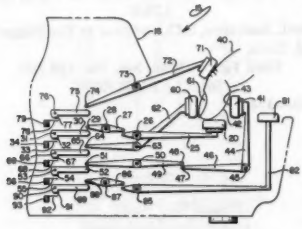
1. An automatic proportional margin setting apparatus for a typewriter including:
- a platen for supporting a sheet of paper thereon;
- a carrier mounted for relative movement with respect to said platen in a substantially parallel path;
- printing means mounted on said carrier for printing indicia on the sheet of paper supported on said platen;
- sensing means mounted on said carrier for defining the location of the left and right edges of the sheet of paper supported on said platen;
- means responsive to the defined location of the left and right edges of said sheet of paper for determining the width of said sheet of paper;
- margin setting means for defining margin locations in accordance with the defined edge locations and in accordance with a predetermined proportional distance; said margin setting means comprising means for establishing a fraction of said width as said proportional distance of said width, and means for combining said proportional distance with said right and left edge locations for determining the margin locations.

4,265,557

KEYBOARD APPARATUS

J. Marvin Runge, 20547 Evergreen Rd., Detroit, Mich. 48219

Filed Jan. 22, 1979, Ser. No. 5,096
Int. Cl.³ B41J *5/08*
U.S. Cl. 400—479 **10 Claims**



1. A keyboard for a key actuated device including a plurality of keys constructed to be actuated by movement of the fingers of an operator downward, forward, backward, and upward against the keys, comprising at each finger position:

(a) a first key disposed among the plurality of keys and having a substantially horizontal contact surface and disposed for downward actuation;

(b) a second key disposed beside and at an angle with respect to the first key, and disposed for forward actuation;

(c) a third key disposed beside, at an angle, and oppositely facing with respect to the second key, and disposed for backward actuation; and

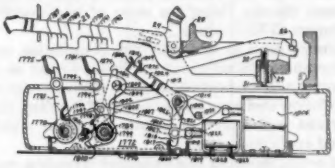
(d) a fourth key disposed above the first key and disposed for upward actuation.

4,265,558

DIFFERENTIAL KEY LOCK MECHANISM FOR JUSTIFYING TEXT WRITING COMPOSING MACHINE

William S. Gubelmann, deceased, late of Convent, N.J.; by Walter S. Gubelmann, executor, Palm Beach, Fla., and William R. Grier, New Vernon, N.J., assignors to Realty and Industrial Corporation, Morristown, N.J.

Division of Ser. No. 732,973, Oct. 15, 1976, Pat. No. 4,140,403, which is a division of Ser. No. 213,045, Dec. 28, 1971, Pat. No. 3,993,179. This application Sep. 25, 1978, Ser. No. 945,801
Int. Cl.³ B41J *5/20*
U.S. Cl. 400—672.2 **18 Claims**



1. A differential key lock mechanism for a composing machine including a carriage wherein groups of proportional character and space keys have allocated thereto different numbers of spacing units, comprising key lock means for differentially locking the character and space keys in said groups, amount left in a line measuring means for ascertaining the number of spacing units left in a line ahead of a predetermined right margin, indexing means for controlling said key lock means according to the number of units left in a line, actuating means connected to said indexing means for rendering said indexing means effective, counting circuit means responsive to said amount left in a line measuring means and connected to said actuating means for operating said indexing means in accordance with the amount left in a line whereby said key lock means block against further operation of any of said proportional character and space keys which have a space unit requirement exceeding the number of space units remaining in a line while at the same time permitting operation of other said proportional character and space keys.

4,265,559

ASPHALT SPREADING MACHINE

Craig R. Mellen, 4248 S. 900 East, Salt Lake City, Utah 84117

Continuation-in-part of Ser. No. 644,976, Dec. 29, 1975, Pat. No. 4,165,192. This application May 10, 1979, Ser. No. 37,895
The portion of the term of this patent subsequent to Aug. 21, 1996, has been disclaimed.
Int. Cl.³ A46B *17/02*
U.S. Cl. 401—48 **9 Claims**

1. Apparatus for carrying and applying hot roofing asphalt compositions comprising:
- a vessel mounted to an axle journaled in and supported by a pair of wheels constituting means for carrying a quantity of liquid asphalt from a source to application zones of a roof;
- handle means at one side of the vessel for pulling said vessel to cause it to travel on said axle across an application zone;
- filling means at the top of said vessel including an open reservoir with a bottom plate constituting the top of said

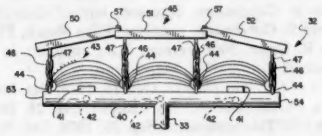
vessel, including an opening to permit flow of liquid asphalt from said reservoir into said vessel;

discharge means at the bottom of said vessel operable to regulate the flow of liquid asphalt out from the bottom of said vessel at a selected rate; and

application means fixed to said vessel to receive liquid asphalt from said discharge means and adapted to spread said asphalt uniformly within said application zone, including:

a supply conduit extending from said discharge means generally away from said handle,

a manifold mounted to follow said axle and connected to receive asphalt from said supply conduit,



skid means associated with said manifold to bear upon the roof when the vessel is pulled across an application zone; thereby fixing the slope of said manifold with respect to horizontal,

discharge ports in said manifold, constituting means for depositing spaced streams of liquid asphalt on the roof within said application zone, spreading means mounted to follow said manifold as the vessel is pulled, thereby to spread said streams of asphalt across the width of the said application zone; and

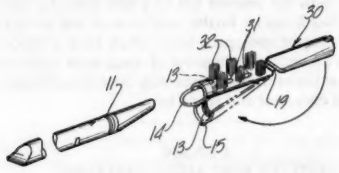
rake means mounted to follow said spreading means and adapted to form said spread asphalt into a plurality of approximately parallel ridges, thereby to meter a predetermined quantity of asphalt per unit area applied to said application zone.

4,265,560

DISPOSABLE TOOTHBRUSH WITH SELF-CONTAINED TOOTHPASTE SUPPLY

Joseph P. Spica, Livonia, Mich., assignor to The 2500 Corporation, Lathrup Village, Mich.

Filed Apr. 30, 1979, Ser. No. 34,659
Int. Cl.[3] A46B *11/02*
U.S. Cl. 401—183 **8 Claims**



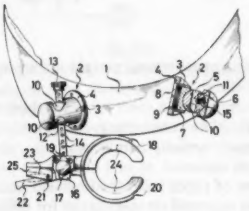
1. A disposable toothbrush with a self-contained toothpaste supply including a flexible hollow cylindrical handle having a closed end and an open flexible end, said open flexible end adapted to assume a conical shape upon insertion into a brush head, said flexible end having at least one handle opening in the wall thereof, dentifrice material stored in said cylindrical handle and adapted to be discharged through said handle opening, a hollow snap on adjustable brush head having bristles depending therefrom and having at least one discharge opening therein adapted to be aligned directly opposite said handle opening, and means to rotatably attach said adjustable brush head to said cylindrical handle, wherein said adjustable brush head is of a one-piece construction having two halves connected by a living hinge, one of said halves having bristles depending therefrom and having at least one discharge opening therein adapted to be aligned with said handle opening, a retaining ring formed integrally with one of said halves, and the other half of said adjustable brush head having a tab member depending therefrom, all adapted when closed to provide an adjustable brush head having an opening complimentary in shape to said cylindrical handle, and adapted when closed, and said retaining ring is placed over said tab, to cause a rotatable but sealing connection between said adjustable brush head and said transparent cylindrical handle.

4,265,561

HOLDERS FOR MEDICAL APPARATUS

Helmut Heckele, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Knittlingen, Fed. Rep. of Germany

Filed Aug. 2, 1979, Ser. No. 63,035
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 7824396[U]
Int. Cl.[3] F16B *2/10;* A61B *1/00, 10/00*
U.S. Cl. 403—3 **4 Claims**



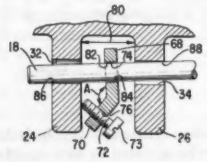
1. In a holder for medical apparatus of the kind comprising a head band provided with a ball and socket joint to receive a ball provided with a carrier and which can move slightly in all directions but is held under friction, the improvement which consists in that said head band has two ball socket joints spaced circumferentially apart thereon by a distance approximately equal to the human interocular distance, said joints including rigidly supported sockets in which are swivelled balls each of which in turn is bored non-circularly to receive a retaining rod arranged to be passed selectively through and axially adjustable in the bore in one of said balls, said retaining rod being provided with a clamping device at its free end for receiving and clamping an endoscope, whereby the surgeon may support the endoscope at the better eye and may raise or lower the rod and swivel it to adjust the endoscope for elevation and range in front of the better eye.

4,265,562

LOCKING DEVICE FOR MOUNTING PINS AND THE LIKE

Ralph G. Seel, Anderson, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 4, 1980, Ser. No. 118,280
Int. Cl.[3] F16B *7/04*
U.S. Cl. 403—374 **1 Claim**



1. In combination, a pin, a support for the pin including

parallel shoulders defining a well therebetween and having aligned holes therein wherein the pin is received, and a locking device for the pin located in said well, the locking device including one leg with an opening through which the pin extends, and another leg disposed at an angle to the said one leg, the locking device also including an adjustable force applying screw extending through a threaded hole in said another leg and engageable at one end with one of the shoulders of the support for tilting the said one leg on the pin and the pin in the openings in the shoulder of the support to thereby affix the pin axially and rotationally in the support, the other end of the screw being separated from the walls and accessible from outside the well.

4,265,563

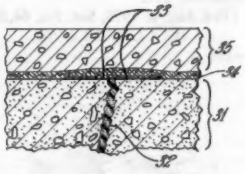
ROAD PAVEMENT AND REPAIR

Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 778,415, Mar. 17, 1977, Pat. No. 4,175,978. This application Sep. 10, 1979, Ser. No. 74,378

Int. Cl.³ E01C *11/04*

U.S. Cl. 404—75 **1 Claim**



1. A method of repairing a crack in a substrate concrete layer of a road pavement comprising filling the crack with a composition composed of rubberized asphalt and 0.5 to 10% glass flake and applying a thin layer approximately 1/16 inch of glass flake over the upper surface of the substrate layer adjacent the crack and over the said composition to provide a multi-layer thickness of slip plane for movement of overlying courses of the pavement.

4,265,564

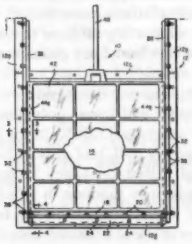
SLUICE GATE ASSEMBLY

Robert P. Watelet, Greenfield, Mass., assignor to Rodney Hunt Company, Orange, Mass.

Filed Oct. 24, 1979, Ser. No. 87,654

Int. Cl.³ E02B *7/28*

U.S. Cl. 405—105 **6 Claims**



1. A sluice gate assembly having a frame surrounding an opening and a gate disc mounted on the frame for movement between an open position permitting fluid flow through said opening and a closed position obstructing said fluid flow, said frame and gate disc having seat facings which are arranged in parallel planes and which cooperate in sealing engagement when the gate disc is in the closed position, said planes being arranged at an angle relative to the path of movement of said gate disc, and adjustment means for shifting the path of movement of said gate disc relative to the seat facing of said frame.

4,265,565

TUNNEL DRIVE SHIELD

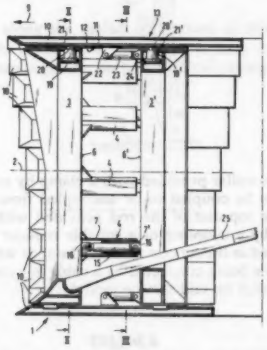
Dieter Stuckmann, Selm, and Hans Jütte, Dortmund-Brechten, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,337

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1977, 2743046

Int. Cl.³ E01G *3/02*

U.S. Cl. 405—145 **21 Claims**



1. A drive shield for use in tunneling, the drive shield comprising:

(a) a generally cylindrical shell supported by two frames spaced apart along the axis of the shell,

(b) the two frames being movably mounted to be displaceable with respect to one another in the direction of said axis, and

(c) guide means interconnect the two frames to permit relative movement therebetween only in the direction of said axis,

(d) said guide means being effective to prevent the two frames from rotating with respect to each other.

4,265,566

APPARATUS FOR SUPPORTING PIPES SUSPENDED OVER DEPRESSIONS IN THE SEA BED, INCLUDING THOSE SITUATED AT GREAT DEPTH, AND THE METHOD FOR INSTALLING IT

Ambrogio Scodino, San Donato Milanese (Milan), Italy, assignor to Saipem, S.p.A., Italy

Filed Mar. 7, 1979, Ser. No. 18,429

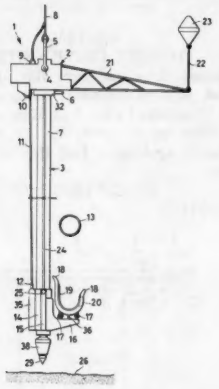
Claims priority, application Italy, Jul. 28, 1978, 26235 A/78

Int. Cl.³ E02D *27/46;* **B63C** *11/52*

U.S. Cl. 405—172 **3 Claims**

1. An apparatus for supporting pipes suspended over depressions in the sea bed, including those situated at great depth, comprising a completely recoverable service module and a support module for supporting the pipe, these modules being connected together in such a manner that they can be separated by simple controls from the depot ship, wherein the support module is constituted by an internally hollow pile of circular cross-section provided on its outside with two diametrically opposing longitudinal toothed guides along which a slide can slide and be fixed in the required position, this slide

being provided with a bracket on which is disposed an inclinable seat, covered on its inner surface with a layer having a high coefficient of friction, which serves to receive and lock the pipe to be supported, inside the pipe there being disposed a rod, the lower end of which emerges from the pile and is fitted with a cutter having a diameter slightly greater than the outer diameter of the pile, the pile being connected to the service



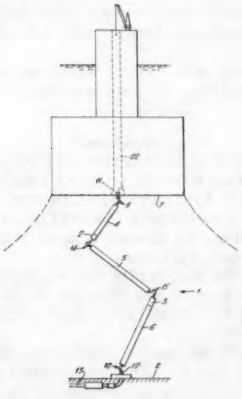
module by a collar provided with a clamp by means of which the pile can be coupled to or uncoupled from said module, whereas the top end of the rod provided with the cutter is connected by a coupling or a suitable reducer to an electric motor housed in the service module, the slide which is slidable along the pile being connected by a cable to a constant tension winch disposed on said service module.

4,265,567

RISER DEVICE

Reidar Nybo, Hvalstad, Norway, assignor to A/S Akers Mek. Verksted, Oslo, Norway

Filed Nov. 16, 1978, Ser. No. 961,413
Claims priority, application Norway, Nov. 30, 1977, 774098
Int. Cl.[3] E02B *17/00*
U.S. Cl. 405—195 **5 Claims**



1. A riser device extendable between an underwater installation and a structure near the water's surface, said riser device comprising

at least three rigid elongated members which can be attached end-to-end to extend between an underwater installation and a structure near the water's surface, the total length of said elongated members being greater than the distance between the underwater installation and the structure, said members supporting interconnected fluid flow lines,

the upper end of the uppermost elongated member being connected to the structure by means of a universal joint, the lower end of the lowermost elongated member being connected to the underwater installation by means of a universal joint, and the remaining ends of the elongated members being connected to each other by means of universal joints, and

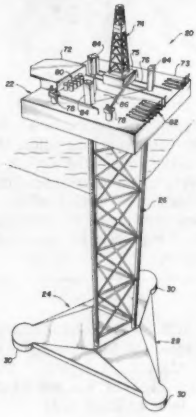
at least the uppermost elongated member having a weight along its length which allows it to operate as a suspended pendulum, at least the lowermost elongated member having a weight along its length which allows it to operate as a standing pendulum, and at least one of the remaining members has a weight which allows it to operate as a strut.

4,265,568

GRAVITY BASE, JACK-UP PLATFORM - METHOD AND APPARATUS

Robert P. Herrmann; Floyd T. Pease, both of London, England, and Donald R. Ray, Houston, Tex., assignors to The Offshore Company, Houston, Tex.

Filed Aug. 6, 1979, Ser. No. 64,264
Int. Cl.[3] E02B *17/08*
U.S. Cl. 405—196 **16 Claims**



1. An offshore platform for flotation to an offshore site and installation in a posture supported upon the bed of the body of water, said offshore platform comprising:

deck means for supporting offshore operations and having a plurality of ballast/buoyancy chambers within the interior of said deck means;

gravity base means having lateral side walls and substantially continuous upper and lower polygonal shaped members connected to said lateral side walls for forming a generally monolithic gravity hull, said gravity hull having a plurality of internal ballast/buoyancy compartments whereby the gravity base may function in a flotation mode during movement of the platform from site to site and in a submerged ballast mode at a desired waterbed site adjacent to but operably spaced above and out of load bearing contact with the waterbed;

a plurality of reaction means downwardly extending from a plurality of generally peripheral locations of said gravity base means for engaging and penetrating into the bed of the body of water and reacting against vertical and lateral

loads and overturning moments imposed upon said offshore platform;

leg means fixedly connected to said gravity base means and extending upwardly therefrom for connection to said deck means; and

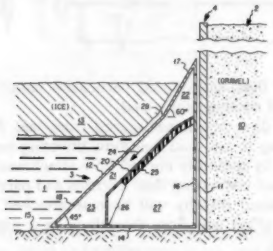
each of said reaction means having a longitudinal dimension and cross-sectional configuration of sufficient magnitude such that in combination said plurality of reaction means cooperate to maintain the offshore platform in an operative posture wherein the lower surface of said gravity hull is positioned adjacent to but operably spaced above and away from load bearing contact with the surface of the waterbed.

4,265,569

ICE BARRIER FOR ISLANDS

Leland V. Gefvert, Anchorage, Ak., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Sep. 21, 1979, Ser. No. 78,311
Int. Cl.³ E02B *15/02*
U.S. Cl. 405—217 **5 Claims**



1. An ice barrier module for disposition around at least part of the periphery of an island in an ice bearing body of water comprising a triangular shaped, closed, hollow body composed of an hypotenuse side and first and second sides opposite said hypotenuse side, said first side being adapted to rest on a support in said water body, said second side being adapted to abut said island, said hypotenuse side having upper and lower sections, said upper section having a steeper angle of inclination with respect to said first side than the angle of inclination of said lower section, said hypotenuse side carrying means for heating said upper and lower sections which comprises a plurality of heating fluid conduit means covering said hypotenuse side and manifold means near the top of said upper section and near the bottom of said lower section for circulating heating fluid through said conduit means, said upper section and a substantial portion of the upper part of said lower section are thermally insulated from the interior of said module, and the remaining lower part of said lower section is not thermally insulated thereby providing for heat flow from said conduit means into the interior of said module.

4,265,570

MINE ROOF CONTROL

Dai S. Choi, Ponca City, Okla., and Hilmar A. von Schonfeldt, Lexington, Ky., assignors to Conoco, Inc., Ponca City, Okla.

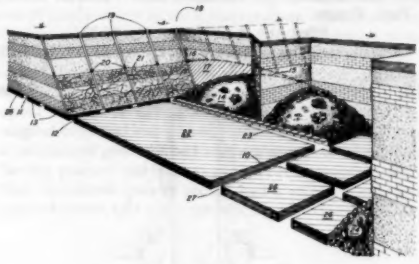
Filed Jun. 1, 1979, Ser. No. 44,817
Int. Cl.³ E21D *19/00*
U.S. Cl. 405—258 **13 Claims**

1. A method of controlling a mine roof comprising:

(a) drilling at least one borehole through a mine roof formation from the surface to a point adjacent a mineral seam, said borehole being at an angle of from 0 to 30 degrees to a vertical reference axis;

(b) sealing off a portion of said borehole from a vertical height of from 20 to 400 meters above the top of said mineral seam to said point adjacent said seam; and

(c) injecting fluid into the sealed off portion of said borehole at a pressure sufficient to create fractures in the mine roof



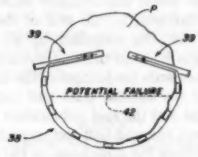
formation along the sealed off portion of said borehole whereby the caving zone over a mined out portion of said mineral seam is greater than the natural caving zone over said portion.

4,265,571

CABLE SLING FOR SUPPORT AND STABILIZATION OF UNDERGROUND OPENINGS

James J. Scott, Rolla, Mo., assignor to Midcontinent Specialties Manufacturing, Inc., Rolla, Mo.

Filed Oct. 22, 1979, Ser. No. 86,709
Int. Cl.³ E21D *21/00, 20/00*
U.S. Cl. 405—259 **21 Claims**



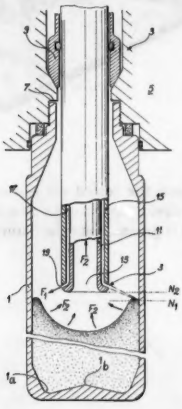
1. In support means for underground passages, the improvement which comprises: cable sling means in the underground passage and having terminal ends penetrating substantially uniform size holes in the material adjacent the underground passage; anchor means engaged with the terminal ends of said cable sling means; and split sleeve members surrounding said cable sling adjacent said anchor means, said split sleeve members being in position for driving said anchor means into the underground passage material and to react in compression upon penetrating the holes in the material for establishing frictional engagement with such material adjacent the underground passage, whereby the cable sling means is tensioned and the anchor means are stabilized in position by said split sleeve members and said split sleeve members actively load the side wall of the holes in the underground passage material radially long substantially the entire length thereof.

4,265,572

PROCESS FOR THE PNEUMATIC TRANSFER OF A PULVERULENT MATERIAL

Claude Bourdois, Palaiseau; Maurice Decolle, Morangis; Michel Ferard, Sartrouville, and Paul Marchal, Gif-Sur-Yvette, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 8, 1979, Ser. No. 64,873
Claims priority, application France, Aug. 11, 1978, 78 23733
Int. Cl.[3] B65G 53/24
U.S. Cl. 406—114 7 Claims



1. An apparatus for the pneumatic transfer of a pulverulent material comprising a container containing the pulverulent material and pneumatic means for emptying said container, wherein said pneumatic emptying means comprise a suction member which can be sealingly mounted in the axis of the container and can be displaced in translation along said axis, the suction member having two coaxial tubes, called the first tube and the second tube, open at their lower ends, said first tube defining in the suction member a central duct for the extraction of the pulverulent material to be transferred and the said second tube defines with the first tube an annular duct for introducing a fluid into said container, said first and second tubes having at their lower end a shape such that when the suction member is mounted in the axis of the container the annular duct issues into the container by an annular nozzle which can direct a gas jet onto the side walls of the container by orienting the jet towards the bottom of the container, means for supplying gas to the annular duct and suction means for extracting the said gas and the said pulverulent material by the central extraction duct, the said first and second tubes comprising means for controlling the dimension of the nozzle opening so that the gas jet having the annular nozzle converges on the side wall of the container, these means controlling the translation of said first and second tubes with respect to each other, whereby when the suction member is mounted in the axis of the container the convergence level of the gas jet on the container walls is maintained substantially level with the pulverulent material level in the container.

4,265,573

PARTICULATE MATTER DISPERSING AND TRANSPORTING SYSTEM

Imants Reba, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Nov. 5, 1979, Ser. No. 91,634
Int. Cl.[3] B65G 53/14, 53/42
U.S. Cl. 406—152 12 Claims

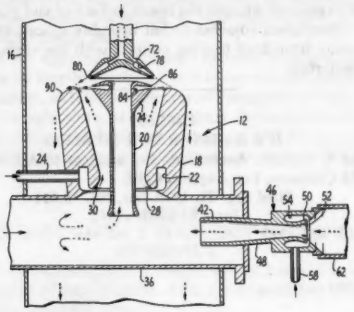
1. Apparatus for dispensing and transporting particulate matter comprising, in combination:

means defining a flow path for said particulate matter;

a conduit defining an interior in fluid flow communication with said flow path and having an outlet;

means for inducing a flow of said particulate matter from said flow path defining means through said conduit and out of said outlet;

fluid curtain generating means positioned adjacent said conduit for directing converging multiple curtains of high



velocity fluid against said particulate matter as it exits from said conduit outlet; and

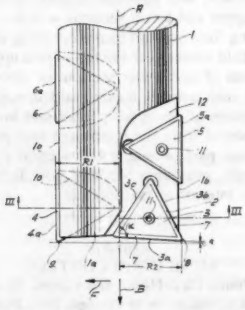
fluid flow directing means spaced from said fluid curtain generating means, said fluid flow directing means having a generally smoothly curved flow-attachment surface to which said converting fluid curtains and particulate matter entrained thereby will become attached due to the Coanda effect and flow therealong in a predetermined direction.

4,265,574

COMBINED BORING AND MILLING TOOL

Otto Eckle, Loechgau, Fed. Rep. of Germany, assignor to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,488
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1978, 7833000[U]
Int. Cl.[3] B23B 51/00; B26D 1/12
U.S. Cl. 408—188 9 Claims



1. In a combined boring and milling tool, including a shank having cutting edges on its front end and on its periphery, the improvements comprised in that the cutting edges are respectively formed by one cutting edge each of turnable cutter blades each shaped like an equilateral triangle, a first said turnable cutter blade being located on the front end of the shank so that its effective cutting edge extends as a bit radially

inward from the periphery of the shank toward the shank axis, overlaps said shank axis slightly and slopes slightly rearward as it extends radially inward, a second said turnable cutter blade offset 180° peripherally from the first turnable cutter blade and located on the front end of the shank so that its effective cutting edge extends as a cutter edge parallel to the shank axis and projects slightly beyond the periphery of the shank.

4,265,575

TOOTH-EDGE GEAR WORKING MACHINE

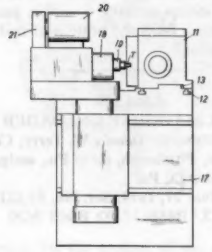
Manfred Erhardt, Puchheim, and Max Stoeckl, Munich, both of Fed. Rep. of Germany, assignors to Carl Hurth Maschinen- und Zahnradfabrik, Munich, Fed. Rep. of Germany

Filed Aug. 11, 1978, Ser. No. 932,705

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1977, 2737598

Int. Cl.³ B23F *19/10*

U.S. Cl. 409—8 **7 Claims**



1. In a tooth edge working machine for working the face edges of spur, bevel and similar type gears, said machine having a workpiece spindle mounted on a workpiece headstock and a tool spindle, said workpiece spindle being adapted to receive a workpiece thereon, a first motor for driving said workpiece spindle, at least one tool clampingly received in said tool spindle and a second motor for driving said tool spindle, the improvement comprising wherein said workpiece headstock is selectively provided with at least one of **(1)** a first gear train and gear drive means coupling said first gear train to said workpiece spindle and said first motor for effecting a continuous rotary drive of said workpiece spindle driven by said first motor and **(2)** a second gear train which contains a means for effecting an intermittent rotation of the said workpiece spindle drivingly coupled to said gear drive means coupled to said workpiece spindle and said first motor, said first gear train including at least one gear and means for removably supporting said one gear in said first gear train and when removed a space is defined, said second gear train being insertable into said space of said removed gear to thereby effect the change from a continuous rotary drive of said workpiece spindle to an intermittent drive thereof.

4,265,576

MILLING MACHINE SYSTEM

Erwin P. Ditsler, Diamond Bar, Calif., assignor to Textron, Inc., Providence, R.I.

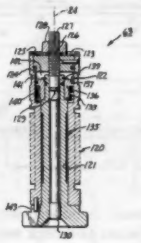
Filed Aug. 27, 1979, Ser. No. 70,006

Int. Cl.³ B23Q *35/16*

U.S. Cl. 409—129 **12 Claims**

1. In a multiple-mode tracer valve for simultaneously controlling the operation of a plurality of motors in order to drive machine tool components along selected ones of three orthogonally related axes, said tracer valve including body, a first, second and third spool valve, a stylus having a central axis, a tip, and a dimension of length, first mounting means mounting said stylus at a first location spaced from said tip along its length, whereby said stylus can be shifted axially and also said tip can be deflected in any lateral direction relative to said axis, adjustment means for adjusting said first mounting means adjustably to determine the lowermost permissible position of the stylus, second mounting means coupling said stylus to said second and third spool valves at a second location along its length to shift the spools of said second and third spool valves along their respective axes by distances proportional to components of displacement of the stylus tip along said axes, and to permit free vertical movement of said stylus, the improvement comprising:

said first spool valve comprising a cylindrical first sleeve and a cylindrical first spool slidably fitted in said sleeve, said spool and sleeve having a common axis, said axis being aligned with said axis of said stylus when said stylus is in a centralized position, said first sleeve and said first spool having grooves and lands to form a coordinating sector, a first directional control sector, and a second directional control sector, said spool valve being ported to supply and



receive fluid to and from motors at regulated and directionally selected rates and to receive pressurized fluid, and to pass fluid to exhaust; and

a transmission interposed between said first spool and said stylus, said transmission comprising a first conical surface in the end of said stylus adjacent to and opening toward said first spool, a ball resting on said first conical surface, a rod having a planar converter surface on its end facing said ball normal to said first axis, said rod being rigidly fixed to said spool, a converter plunger axially slidably mounted in said first spool surrounding said rod, a second conical surface opening toward said ball, converter means for shifting said converter plunger to a position where the ball can bear against said converter surface, or to a position where said ball bears against said second conical surface but not against said converter surface, and converter means to shift said converter plunger to a selected one of said positions.

4,265,577

TWO-PIECE CURTAIN-LIKE LADING-RESTRAINING DEVICE

Russell M. Loomis, Palos Heights, Ill., assignor to Unarco Industries, Inc., Chicago, Ill.

Filed May 31, 1979, Ser. No. 44,054

Int. Cl.³ B60P *7/00*

U.S. Cl. 410—118 **4 Claims**

1. Lading-engaging curtain means for use in a lading-carrying container, such as a truck-trailer, which has a pair of spaced sidewalls, a bottom wall and a top wall, wherein the improvement comprises:

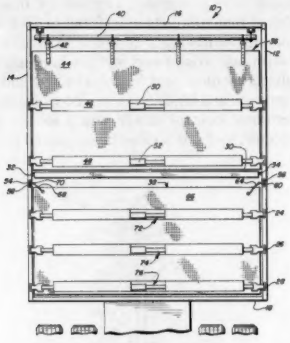
said vehicle having deck means for positioning in spaced relation to said bottom wall for carrying a load or cargo;

said curtain means being constructed of a flexible, fabric like material and further including upper curtain means for positioning above said deck means and lower curtain means for positioning below said deck means, restraining belt means cooperatively associated with each of said upper and lower curtain means and adapted for releasable engagement only with said sidewalls for cooperation with

said curtain means in restraining longitudinal movement of said lading;

each of said curtain means constructed to extend transversely of said side top and bottom walls for engaging and restraining lading;

trolley means adjacent said top wall means for suspending said upper curtain means therefrom and for positioning said upper curtain means across the face of lading carried on said deck means;



track channel means associated with each of said sidewalls below and adjacent said deck means and extending therealong, each of said channel means including a box-like section having means defining a slot;

slider means positioned within each of said channels for longitudinal movement therein and having a curtain-connecting portion extending through said slot; and

said lower curtain means including connector means for securing said curtain to said connecting portion of slider means so as to support and suspend said curtain means from said slider means.

4,265,578

SHEET FEEDING APPARATUS

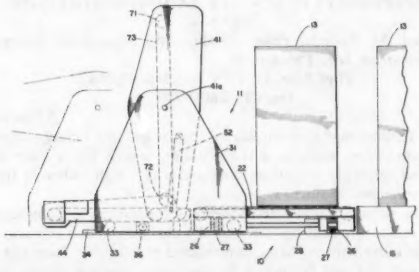
Louis J. Frederick, Fairmount; Kenneth E. Hoke, Marion; Jerrold W. Greene, Marion, and Stephen D. Miller, Marion, all of Ind., assignors to Greene Line Mfg. Corporation, Marion, Ind.

Continuation-in-part of Ser. No. 771,456, Feb. 24, 1977, Pat. No. 4,119,220. This application Sep. 18, 1978, Ser. No. 943,456

The portion of the term of this patent subsequent to Oct. 10, 1996, has been disclaimed.

Int. Cl.[3] **B65H** *1/22*

U.S. Cl. 414—130 **8 Claims**



1. Apparatus for feeding sheets in a shingled condition comprising:

support means for supporting sheets in a stack in an upright position, a cradle for the stack formed by spaced, generally L-shaped members, means for pivotally supporting said cradle on a horizontal pivotal axis, one set of legs of the L-shaped members carrying conveying means therebetween, additional means for pivoting the cradle about said axis between a load position in which said conveying means and said one set of legs are horizontal and receive the stack moving horizontally from said supporting means, the stack entering between the other set of legs positioned vertically, and a feed position in which said other set of legs is horizontal, and load support means moved laterally into the space between said other set of legs of said cradle prior to pivotal movement of the cradle toward said feed position, a first conveyor means aligned with said cradle and having means operable to convey said sheets away from said cradle in said feed position, a gate positioned over said first conveyor means having a bottom end and defining an upwardly extending plane against which sheets upon said first conveyor means may form a second stack of sheets, and means connected to said gate operable to move said bottom end to and from said first conveyor means defining a varible passage through which sheets move from the bottom of said second stack in shingled fashion.

4,265,579

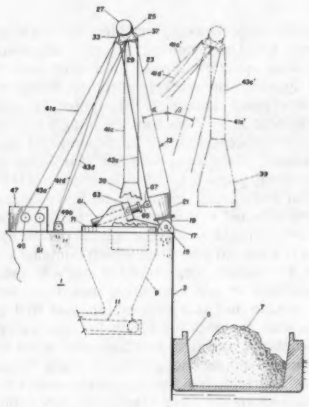
BULK MATERIAL UNLOADER

Laimons Naruns, Pittsburgh; Dennis W. Terry, Coraopolis, and Samuel K. Stellfox, Pittsburgh, all of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Jun. 27, 1979, Ser. No. 52,621

Int. Cl.[3] **B63B** *27/00;* **B66B** *9/20*

U.S. Cl. 414—138 **10 Claims**



1. A bulk material unloader comprising:

a base along one side of which a container of bulk material is positioned for unloading;

a bulk material receiving hopper mounted in said base;

a boom hinged at one end to the base for rotation about a horizontal pivot axis which is parallel to said one side of said base and located between said hopper and the one side of the base;

means for pivoting said boom from a first side of said horizontal pivot axis wherein the boom extends outward over the container to be unloaded, through the vertical to a second side wherein the boom extends inward over the hopper;

a clamshell bucket;

hold and close ropes for supporting and operating said clamshell bucket respectively;

sheaves rotatably mounted near the free end of said hinged

boom and over which said hold and close ropes are reeved; and

hold and close hoists for operating said hold and close ropes respectively mounted on said base and spaced from the pivot axis of said boom in the direction of said hopper.

4,265,580

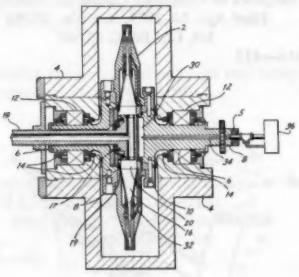
SYSTEM FOR THROTTLING AND COMPENSATION FOR VARIABLE FEEDSTOCK PROPERTIES

John W. Meyer, Palo Alto, Calif., assignor to Lockheed Missiles & Space Company, Inc., Sunnyvale, Calif.

Filed Apr. 23, 1979, Ser. No. 32,651

Int. Cl.³ F23D *11/06*

U.S. Cl. 414—217 **6 Claims**



1. Apparatus for the control of the continuous feeding of relatively fine particulate material into a high pressure container, comprising:

(a) a rotor disposed in a high pressure housing and having a central hub and a plurality of sprues providing a passageway through which the particulate material is passed and which extend radially outward from an inner periphery to the edge of the rotor where the particulate material is discharged,

(b) each sprue having a wide opening at the inner periphery defining the entrance for the particulate material,

(c) the walls of the sprues defining a rapidly converging first section as they extend radially outward from the inner periphery to provide a low pressure gradient section for receiving loosely packed particulate material,

(d) the sprues having a second section extending radially outward beyond and in line with the first section to terminate adjacent an orifice opening at the periphery of the rotor, the walls thereof having a substantial change from the rapid angular convergence of the walls of the first section as the outer edge of the rotor is approached to define a high pressure gradient section of the sprue through which a bed of densely packed particulate material is passed, and

(e) variable high pressure gas supply means externally of the housing for varying the high pressure gradient in the second section of the sprue to thereby adjust for changes in flow rate or permeability of the particulate material and having an elongated closed gas feed line connected thereto, the discharge end of which extends through the walls of the second section of the sprue.

4,265,581

AUTOMATED PARKING SYSTEM AND SUBASSEMBLIES THEREFOR

Frank E. Ives, Kent, and Albert C. Saurwein, Seattle, both of Wash., assignors to Venus Products, Inc., Kent, Wash.

Filed Jul. 16, 1979, Ser. No. 57,814

Int. Cl.³ F04H *6/22*

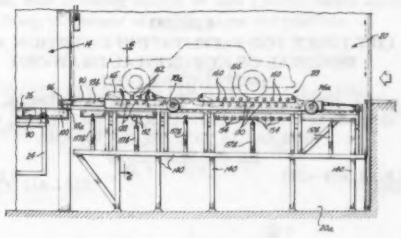
U.S. Cl. 414—228 **4 Claims**

1. In an automated parking system for vehicles, said vehicles having tires, said parking system including a ramp capable of supporting a vehicle, said ramp including a plurality of sets of spaced finger members for supporting each of the tires of a vehicle resting on said ramp,

shuttle means for carrying said vehicle to and from said ramp, said shuttle means including a plurality of sets of fingers corresponding to the plurality of sets of fingers on said ramp, said shuttle means having wheels,

means for moving said shuttle means from a position located under said ramp to a position removed from said ramp,

means associated with said set of fingers on said shuttle means for moving the sets of fingers thereon above and below the ramp when said shuttle means is positioned below said ramp, the sets of fingers on said shuttle means being constructed and spaced to interdigitate with the corresponding sets of fingers on said ramp as said fingers on said shuttle means are raised and lowered past said fingers on said ramp,



a platform associated with said ramp, said platform having a plurality of sets of fingers corresponding to the plurality of sets of fingers on said ramp, said fingers on said platform being constructed and spaced to interdigitate with said fingers on said ramp, and

means for raising said platform into substantially coplanar relationship with said ramp so that said fingers on said platform interdigitate with said fingers on said ramp to form a substantially continuous upper surface for supporting pedestrian traffic, and for lowering said platform so that said shuttle means can be positioned above said platform and below said ramp, and

a member joined to said plurality of sets of fingers on said platform, said member having a flat surface on the upper side therof for receiving the wheels of said shuttle means in rolling relationship when said platform is in the lowered position, thereby supporting said shuttle means under said ramp.

4,265,582

ARRANGEMENT FOR STORING OF PALLETS USED FOR HOLDING MATERIAL

Adolf Theobald, Merschstrasse 5, 5758 Fröndenberg-Warmen, D, Fed. Rep. of Germany

Filed Jun. 5, 1978, Ser. No. 912,466

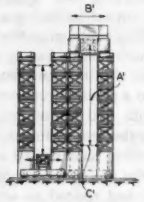
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2725789

Int. Cl.³ B65G *1/00, 65/00*

U.S. Cl. 414—279 **8 Claims**

4. An arrangement for storing pallets used for holding material, particularly lengthy material, comprising a plurality of shelves located and fixed next to one another and having vertical members on said shelves, said shelves being above floor level and forming a plurality of stacked compartments for accommodating pallets and said compartments being accessible from at least one broad side of the shelves; a loading and removal device travelling transversely to said shelves under-

neath the shelves and including a travelling lifting table with means for loading and removal of said pallets; and guide means



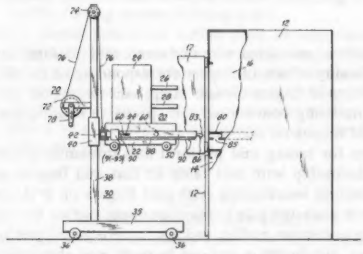
fixed to said vertical members for lateral support of a platform of said lifting table.

4,265,583

LIFT TRUCK FOR FACILITATING INSERTION AND REMOVAL OF HORIZONTAL DRAW-OUT SWITCHGEAR UNIT

Leslie L. Baird, and Gary M. Stolz, both of Burlington, Iowa, assignors to General Electric Company, Philadelphia, Pa.

Filed Aug. 15, 1978, Ser. No. 933,934
Int. Cl.³ B65G 65/00
U.S. Cl. 414—284 **5 Claims**



1. A lift truck for transporting a movable switchgear unit into a position where said unit can be inserted horizontally into an upper-level space within a metal-clad switchgear cubicle, said cubicle having horizontally-spaced, substantially horizontally-extending rails in said upper-level space along which said unit is rolled during insertion thereof into said cubicle, said truck comprising:

(a) a pair of horizontally-spaced, substantially horizontally-extending truck rails along which said switchgear unit can be rolled as the switchgear unit is moved toward its inserted position within said cubicle,

(b) means for selectively raising and lowering said truck rails while said switchgear unit is positioned thereon,

(c) locking means operable after said truck rails have been raised for locking said truck rails in a fixed position with respect to said cubicle rails wherein said truck rails and said cubicle rails are substantially axially aligned said locking means being operable to lock said truck rails to said cubicle rails only when said truck rails and said cubicle rails are substantially axially aligned,

(d) insertion-blocking means carried by said truck and movable with said truck rails while said truck rails are being raised or lowered, said insertion-blocking means being effective when in a first position for blocking insertion motion of said movable switchgear unit on said truck rails, and effective in a second position to provide no blocking of insertion motion of said switchgear unit on said truck rails, said insertion-blocking means being operable between said first and second positions, and

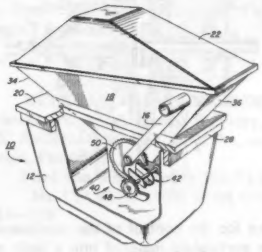
(e) means also movable with said truck rails while said truck rails are being raised or lowered for preventing operation of said insertion-blocking means from said first to said second position until said locking means has been operated into a position for locking said truck rails to said cubicle rails in substantially axially-aligned relationship.

4,265,584

SYSTEM FOR OPENING AND EMPTYING CONTAINERS

Michael J. Duwell, Chicago, and Paul B. Specht, Wilmette, both of Ill., assignors to Heartland Chemicals, Farmer City, Ill.

Filed Apr. 13, 1979, Ser. No. 29,782
Int. Cl.³ B65G 65/40
U.S. Cl. 414—412 **13 Claims**



1. Apparatus for use in opening and emptying a container holding a flowable material, comprising

a housing,

support means for supporting said container in a predetermined position in said housing, and

piercing and cutting means rotatably mounted to said housing for rotation between a first position displaced from a container supported in said predetermined position and a second position,

said piercing and cutting means being configured so as to pierce the wall of said container at two spaced locations and to cut two slots therein as said piercing means is rotated from said first to said second position.

4,265,585

LOADING DEVICE FOR VEHICLE BEDS

Wallace H. Hawkins, Rte. 7, Old Buncombe Rd., Greenville, S.C. 29609

Filed Jul. 9, 1979, Ser. No. 55,896
Int. Cl.³ B60P 1/54
U.S. Cl. 414—541 **4 Claims**

1. A loading device for wheeled vehicles having an elongated loading bed comprising:

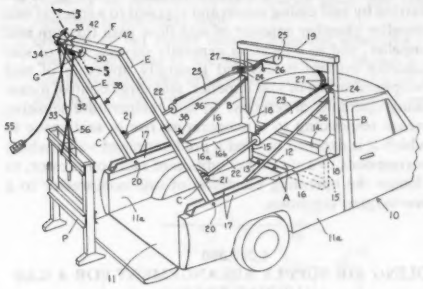
a supporting frame having marginal portions adjacent marginal portions of said bed;

a pair of spaced transversely aligned standards fixed adjacent respective forward marginal portions of said supporting frame and extending upwardly therefrom;

a pair of transversely aligned boom members each pivotally carried on one end thereof adjacent said supporting frame rearwardly of said standards in longitudinal alignment therewith;

a pair of aligned fluid operated piston and cylinder assemblies each having pivotal connection on opposite ends thereof on a respective standard and boom member;

a transverse bridging member joining said boom members; and



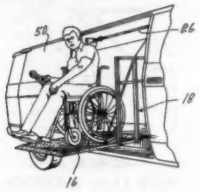
a load securing means carried adjacent said bridging member independent of said standards.

4,265,586

LIFT ASSEMBLY

Jacques Couture, Rte. 277, St. Claire, County of Bellechasse, Province of Quebec, Canada (G0R 2V0)

Filed Oct. 5, 1978, Ser. No. 948,800
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—545 **2 Claims**



1. A lift assembly for use on a vehicle comprising:

(a) a pair of vertically-spaced support posts adapted to be mounted within the vehicle just inwardly of a side or rear doorway;

(b) a platform pivotable between an operative substantially horizontal position and an inoperative upright stored position, said platform, while in said operative position, adapted to be moved from ground to an intermediate position outside the vehicle which is substantially level with the floor of the vehicle, said platform having an inner end portion closer to said vehicle and an outer end portion extending away from said vehicle when in said operative position;

(c) a pair of linkages interconnecting said platform and said posts, each linkage comprising two rigid, parallel supporting arms pivotally connected to and slidably mounted at their inner end along a respective post, an inner and an outer upright rigid arm, parallel to each other, and pivotally connected at their top end to said parallel, supporting arms at points spaced outwardly from the inner ends of said supporting arms, and at their lower end to the inner end portion of said platform, said parallel supporting arms and said platform forming parallelograms with upright parallel arms and with said respective posts, so that the linkages and platform may be folded to a stored position inside the vehicle;

(d) inextensible, flexible tie means connected to the pivotal connection of one of said supporting arms with said inner upright arm, and to the outer portion of said platform for maintaining the platform level with the ground during movement of the platform from ground to said intermediate position, while allowing folding of said linkages and platform to said stored position;

(e) means for moving said platform from ground to said intermediate position, including a shaft journalled across the upper end of said posts, a pair of cables each attached at one end to said shaft and at its other end to said pivotal connection of a respective linkage, and means for rotating said shaft to cause said pair of linkages to slide on said posts and thus raise or lower the platform attached to the linkages and to allow the inner ends of said supporting arms to slide down along said posts during folding movement of said linkages and platform; and

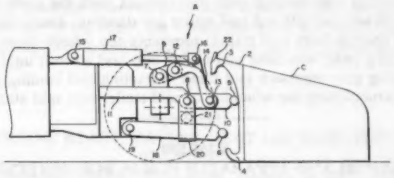
(f) control means having actuation means mounted thereon for causing vertical adjustment of said platform, said control means comprising an arm pivotally mounted to the lower end of said inner upright arm of one of said linkages, a stop carried by said outer upright arm of said one linkage for releasably retaining said control means in an upwardly and outwardly inclined operative position and thus allowing folding of said control means during folding movement of said linkages and platform.

4,265,587

QUICK-COUPLING LOCKING MECHANISM

James W. Clark, Gladstone, Mich., assignor to Envirotech Corporation, Menlo Park, Calif.

Filed Jul. 25, 1979, Ser. No. 60,267
Int. Cl.³ E02F *3/81*
U.S. Cl. 414—723 **5 Claims**



1. A quick-coupling locking mechanism for attaching a service module to a mining service vehicle or the like, said service module having secured thereto attachment means formed to define a lifting hook at its top and a holding hook at its bottom, comprising:

a. a linkage assembly secured to said service vehicle, said linkage assembly having a lifting bar link having one end pivotally mounted to the frame of said vehicle and a distal end having a horizontally extending lifting bar fixed thereto, and a holding bar link having one end pivotally mounted to the frame of said vehicle and a distal end having a horizontally extending holding bar fixed thereto;

b. selectively extensible reciprocative actuator means connected to said lifting bar link to forceably move said lifting bar link to pivot said link in a vertical arc such that said lifting bar is moved into engagement with said lifting hook to lift said service module at its rear end, to draw said module toward said service vehicle and to lift said service module to the fixed carry position, such that said holding hook is brought into engagement with said holding bar;

c. separating means affixed for engagement between said holding bar link and said separating link to provide a separating force between said lifting bar and said holding bar to ensure that said lifting bar and said holding bar are securely engaged with said lifting hook and said holding hook, respectively; and

d. lockable toggle linkage connected at one end to said vehicle and at its other end to said lifting bar link such that said separating means operates to lock said toggle linkage so that said lifting bar and said holding bar are held in secure engagement with said lifting hook and said holding

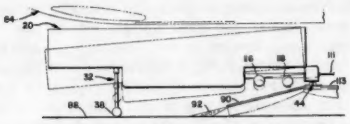
hook, respectively, independent of the influence of any hydraulic system.

4,265,588

METHODS FOR LOADING AN AIR TRANSPORTABLE TRAILER ABOARD AN AIRCRAFT AND FOR UNLOADING IT THEREFROM

J. Bryan Oshel, Spring Valley, and Robert J. Bennett, San Diego, both of Calif., assignors to International Harvester Company, Chicago, Ill.

Filed Aug. 21, 1979, Ser. No. 68,384
Int. Cl.³ B64C 1/22; B64D 9/00
U.S. Cl. 414—786 **5 Claims**



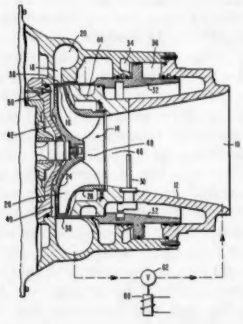
1. A method of loading a trailer coupled to a tractor and having vertically extensible landing gear at one end thereof, a jacking and support means at the opposite end thereof, and retractable running gear including roadable wheels into an aircraft having a cargo deck and equipped with an onboard winch and a cargo ramp, said method including the steps of: positioning said trailer with said jacking and support means over and in contact with said cargo ramp or said cargo deck; extending said landing gear into contact with the surface on which said aircraft and said trailer are standing; disconnecting said tractor from said trailer; removing the wheels from said running gear; winching said trailer into said aircraft until said landing gear approach said ramp; retracting said landing gear; and completing the winching of said trailer into said aircraft.

4,265,589

METHOD AND APPARATUS FOR SURGE DETECTION AND CONTROL IN CENTRIFUGAL GAS COMPRESSORS

Thomas E. Watson, Staunton, and Paul R. Smallwood, Jr., Grottoes, both of Va., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 18, 1979, Ser. No. 49,686
Int. Cl.³ F01D 21/12
U.S. Cl. 415—47 **8 Claims**



1. A centrifugal gas compressor comprising:

a rotatable impeller having a front central inlet, and a peripheral outlet, and having a gas flow path defined between said inlet and outlet;

casing means including wall means defining an impeller chamber in which said impeller is situated and further defining an inlet passage space upstream of said central inlet of said impeller;

capacity control means in said inlet passage space for controlling the degree of open area of said passage space; and

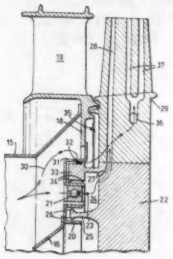
surge control means including temperature sensing means carried by said casing means and exposed to a space in said impeller chamber exterior of said flow path through said impeller, and in a location generally downstream of said capacity control means and generally upstream of said peripheral outlet of said impeller, said surge control means being operable, in response to said temperature sensitive means responding to a temperature rise in said space to which it is exposed beyond a predetermined value which corresponds to a surging condition of said compressor, to change the operating condition of said compressor to a non-surging condition.

4,265,590

COOLING AIR SUPPLY ARRANGEMENT FOR A GAS TURBINE ENGINE

David O. Davies, Duffield, England, assignor to Rolls-Royce Limited, London, England

Filed May 14, 1979, Ser. No. 38,707
Claims priority, application United Kingdom, May 20, 1978, 20951/78
Int. Cl.³ F02G 7/18
U.S. Cl. 415—110 **8 Claims**



1. An improved gas turbine engine comprising a rotor, a source of cooling air at a high supply pressure, a cooling air supply arrangement for delivering cooling air from said source to said rotor, said cooling air supply arrangement including a first passage for supplying a first flow of said cooling air from said source to a first area of said rotor to be cooled, said first flow being at a first pressure lower than said high supply pressure, a second passage for supplying a second flow of said cooling air to a second area of said rotor, said second flow being at a reduced second pressure lower than said first pressure, and sealing means between said first area and said second area for resisting flow of cooling air at said first pressure from said first area to said second area, wherein the improvement comprises a part of said second passage being incorporated into said sealing means, said part of said second passage including nozzles provided in said second passage and oriented in a direction to discharge at least part of said second flow of cooling air in an upstream direction directly against leakage flow in said sealing means from said first area toward said second area to reduce such leakage flow and to simultaneously reduce pressure of said second flow of cooling air to said second area.

4,265,591

ADJUSTABLE PITCH FAN

Florian Gurbin, 331 Gosfield Ave., Essex, Ontario, Canada

Filed Dec. 12, 1978, Ser. No. 968,759
Int. Cl.³ B63H 3/04
U.S. Cl. 415—148 **8 Claims**

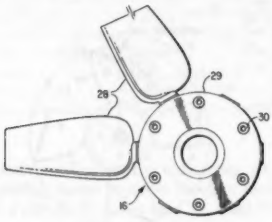
1. Adjustable pitch fan apparatus comprising:

a hub having an annular base with upstanding inner and

outer walls concentrically disposed thereon defining a channel;

a plurality of openings equally spaced apart and radially disposed in the outer wall;

a plurality of fan blades radially disposed along the outer wall in the plane of the hub, each blade having a stem rotatably journalled in a corresponding opening, an inner end, and a cam rotatably disposed in the channel; and



a plurality of discrete rigid link members freely disposed in the channel and slidably interlinking adjacent pairs of cams, individual ones of said members being curved to conform to the channel and interposed between the cams of adjacent pairs of fan blades whereby rotation of at least one blade rotates its cam and slidably displaces said link members to rotate the other cams which correspondingly adjust the pitch of the blades.

4,265,592

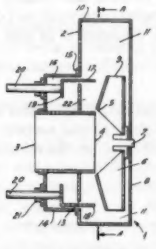
CENTRIFUGAL FAN

Gerardo P. V. Carlini, Gavilan 4552, Buenos Aires, Argentina

Filed May 9, 1979, Ser. No. 37,454

Int. Cl.³ F04D *27/00*

U.S. Cl. 415—157 **5 Claims**



1. A centrifugal fan, comprising a casing defining a substantially cylindrical jacket having a tangentially directed outlet duct and lateral walls, one of said walls being formed with a tubular inlet duct partially projecting into the casing; an impeller supported for rotation in said casing opposite the opening of said inlet duct, the diameter of said impeller exceeding the diameter of said inlet duct; and axially adjustable tubular partition means passing through said one wall around said inlet duct, said tubular partition means being spaced apart from the periphery of said inlet duct to define therewith an annular diffusing antechamber communicating via a variable gap with the main diffusing chamber formed between said jacket and the periphery of said impeller.

4,265,593

STALL STABILIZER FOR A CENTRIFUGAL ROTOR

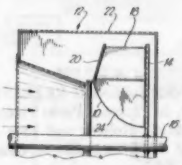
C. W. Hatton, 88A Avondale Ave. S., Waterloo, Ontario; J. C. Orr, 194 Winston Blvd., and R. G. Stevenson, 52 Alderwood Crescent, both of Cambridge, Ontario, all of Canada

Filed Mar. 21, 1979, Ser. No. 22,543

Claims priority, application Canada, Sep. 14, 1978, 311314

Int. Cl.³ F04D *29/30*

U.S. Cl. 416—183 **3 Claims**



1. In a centrifugal rotor of the type having a plurality of backwardly inclined blades secured to a backplate in spaced relation and defining cells between each blade, said backplate being mounted on a shaft for rotation within a rotor housing and wherein said centrifugal rotor is susceptible to stall; the improvement comprising means for preventing said stall from rotating around the rotor from one cell to another comprising an aerodynamic extension to at least one blade but less than all of said plurality of blades of the rotor, said extension being directed from the lower or inner edge of said at least one blade into the eye of the rotor; the configuration of said blade being of exacting profile and being defined by the aerodynamics of the rotor.

4,265,594

TURBINE BLADE HAVING HEAT LOCALIZATION SEGMENTS

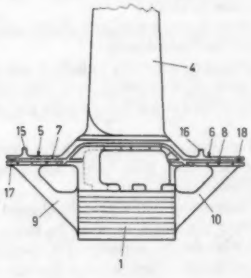
Jean Eggmann, Baden, Switzerland, assignor to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed Feb. 28, 1979, Ser. No. 15,890

Claims priority, application Switzerland, Mar. 2, 1978, 2252/78

Int. Cl.³ F01D *11/08*

U.S. Cl. 416—193 A **6 Claims**



1. A blade for a turbine section, of a gas turbine, comprising:

a blade root;

a blade member extending directly from the blade root;

first and second heat localization segments including first and second covering elements respectively, the first and second covering elements being formed as one piece with the blade member and the blade root, said covering elements impeding access of a working medium to a rotor of the turbine;

each covering element including a cover plate and support-

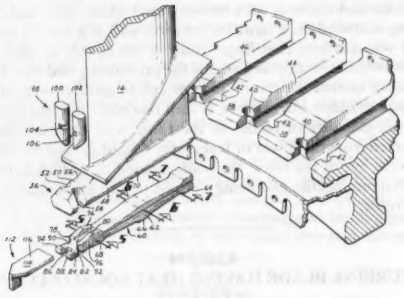
ing means for stiffening the cover plate, a portion of the cover plate adjacent the blade member and blade root being angled toward the blade member, said supporting means connecting the cover plate to an axial end face of the blade root.

4,265,595

TURBOMACHINERY BLADE RETAINING ASSEMBLY

Raymond W. Bucy, Jr., Terrace Park; Vicente C. Gallardo, Jr., Hamilton; Ronald C. Hollett, and Eric A. Young, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 2, 1979, Ser. No. 474
Int. Cl.[3] F01D *5/32*
U.S. Cl. 416—220 R **10 Claims**



1. An improved blade retaining assembly for locking a generally radially extending blade in a turbomachinery rotor, the blade having a dovetail at its radially inward end and the rotor having a dovetail slot extending generally axially across its periphery from one side of the rotor to the other, the blade dovetail being received within the dovetail slot including:

a first notch extending generally radially along a first lateral side of the blade dovetail;

a second notch extending generally radially along the other lateral side of the blade dovetail;

a third notch extending generally radially along a first dovetail slot side wall corresponding to the first blade dovetail lateral side, said third notch being axially aligned with said first notch;

a fourth notch extending generally radially along the other dovetail slot side wall, said fourth notch being axially aligned with said second notch;

axial retention means disposed within the aligned notches for axially retaining the blade dovetail in place within the dovetail slot wherein the improvement comprises:

spring spacer means interposed between the radial interior of the blade dovetail and the dovetail slot for exerting a radially outwardly directed force upon the blade dovetail;

a fifth notch extending radially along a first lateral side of the spring spacer means, said fifth notch being axially and radially aligned with said first notch;

a sixth notch extending radially along the other lateral side of the spring spacer means, said sixth notch being axially and radially aligned with said second notch; and

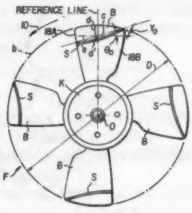
wherein said axial retention means is disposed within the fifth and sixth notches for retaining the spring spacer means in place within the dovetail slot.

4,265,596

AXIAL FLOW FAN WITH AUXILIARY BLADES

Haruo Katagiri; Kenji Fujikake, and Katsuhito Yamada, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoya, Japan

Filed Nov. 21, 1978, Ser. No. 962,695
Claims priority, application Japan, Nov. 22, 1977, 52-140135
Int. Cl.[3] F04D *29/38, 29/58*
U.S. Cl. 416—236 A **64 Claims**



1. An axial flow fan having auxiliary blades which comprises:

a drive source;

a hub rotatably supported and driven by said drive source,

a plurality of fan blades extending radially outwardly from said hub, and including a suction surface and a pressure surface; and

at least one auxiliary blade projecting from an outer part of at least one of said suction and pressure surfaces of said fan blade, said auxiliary blade having a leading and trailing edge extending in a chordlength direction such that a leading region of the auxiliary blade is located nearer the central axis of the fan than a trailing region of the auxiliary blade wherein,

a supplementary angle θ_0 of an angle formed between a chord line connecting the leading edge and a trailing edge of said auxiliary blade and a reference line extending from the central axis of the fan has the relation

$$5° \leqq \theta_0 \leqq 40°$$

wherein a distance Y_0 from said trailing edge of said auxiliary blade to the radial outermost part of said fan blade has the relation to the diameter D of said fan

$$0 \leqq Y_0 \leqq .1D; \text{ and}$$

wherein the maximum height H of said auxiliary blade in a direction perpendicular to said suction or pressure surface of each of said fan blades has the relation to diameter D of said fan

$$0.02D \leqq H \leqq 0.055D.$$

4,265,597

BLOWER SYSTEMS CIRCUIT INTERRUPTING APPARATUS AND METHOD

Harris F. Payne, Arlington, and Michael G. Evans, Houston, both of Tex., assignors to A.R.A. Manufacturing Co., Grand Prairie, Tex.

Filed Aug. 11, 1978, Ser. No. 933,639
Int. Cl.[3] F04B *49/06;* **F25B** *1/04*
U.S. Cl. 417—32 **9 Claims**

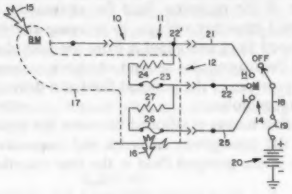
1. A blower motor control for a vehicular air conditioning and heating system comprising:

a circuit interrupting means positioned in the blower air stream;

said circuit interrupting means, having circuit heating means responsive to current flowing in the circuit for causing the circuit interrupting means to interrupt when the stream of

air stops or does not sufficiently cool the heating means and the heating means over-heats from an overload in the circuit, to protect the circuit from overloading and to prevent fires;

the heating means includes a resistance heater which is a blower motor speed-dropping resistor; and



the circuit interrupting means includes a fuse which is heated by the heating means to cause the fuse to interrupt the circuit at a current flow less than the rated current carrying capability of the fuse.

4,265,598

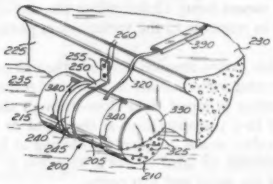
APPARATUS AND METHOD FOR DE-ACTUATING SWIMMING POOL EQUIPMENT

Stanley W. Brand, 13102 Woodlawn Ave., Tustin, Calif. 92680

Continuation-in-part of Ser. No. 900,511, Apr. 27, 1978, abandoned. This application Sep. 15, 1978, Ser. No. 942,488

Int. Cl.[3] F04B *49/04;* F04H *3/18*

U.S. Cl. 417—40 **1 Claim**



1. A device for automatically deactuating an electrically powered water pump for a swimming pool in response to a predetermined drop in the level of water in the pool, comprising:

an open-ended tubular member horizontally disposed in said pool;

first and second cap members covering the open ends of said tubular member and removably attached thereto;

said tubular member with said cap members forming a chamber in communication with said pool filled with water from said pool to the same level as the water in said pool, at least one of said cap members having means for permitting the flow of water from said pool into and out of said chamber;

electrical switching means for electrically coupling said pump to an electrical power source when said switching means is in a first state and decoupling said pump when said switching means is in a second state;

float means floating in the water in said chamber and connected to said switching means for maintaining said switching means in said first state when said float means is supported by the water in said chamber at least at a predetermined level, and changing said switching means to said second state when said float means falls below said predetermined level in response to a corresponding drop in the level of water in said pool.

4,265,599

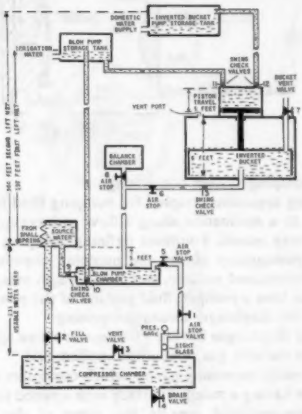
HYDROPNEUMATIC ENERGY SYSTEM

Paul H. Morton, 180 Berkeley St., Satellite Beach, Fla. 32937

Filed Jan. 31, 1979, Ser. No. 7,913

Int. Cl.[3] F04F *1/08*

U.S. Cl. 417—54 **11 Claims**



1. A method of extracting energy from a non-surging fluid source of potential energy, including the steps of:

permitting fluid from said non-surging source to enter a container;

venting into a pressurized gas system gas displaced by said fluid entering said container; and draining said fluid from said container via pneumatic valve means controlled by pilot valve means responsive to fluid displaced magnetic means while permitting a fresh charge of gas to enter said container.

4. An apparatus for extracting energy from a non-surging fluid source of potential energy, comprising:

a container;

control means to admit fluid from said source into said container;

vent means to allow gas displaced by said fluid in said container to exit said container as compressed gas;

drain control means responsive to said fluid entering said container and reaching a predetermined volume for closing said means to admit said fluid;

said drain control means including, a pneumatic valve, a pilot valve for controlling said pneumatic valve, a pilot valve actuator including a lever arm supporting a magnetic mass, a non-ferrous tube positioned adjacent to said lever arm, a ferrous mass adapted to move within said non-ferrous tube as a function of the fluid level in said container;

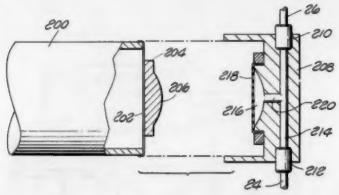
drain means responsive to said drain control means for permitting said fluid to drain from said container;

vent means to permit a fresh charge of gas to enter said container as said fluid drains from said container;

fill control means responsive to the removal of said fluid from said container; and

means responsive to said fill control means for closing said drain means and opening said control means to admit fluid from said source into said container.

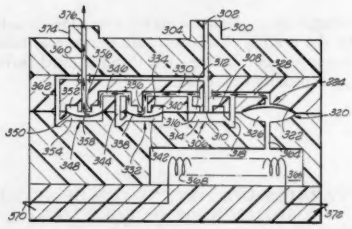
4,265,600
PUMP APPARATUS
Harold Mandroian, 2137 Los Amigos, La Canada, Calif. 91011
Filed Sep. 5, 1978, Ser. No. 939,924
Int. Cl.[3] F04B *43/06*
U.S. Cl. 417—379 **1 Claim**



1. A pumping system comprising:
pumping apparatus coupled for pumping fluid from a reservoir to a destination along a flow path comprising a passageway means, a volume defining pumping chamber in the passageway means, the pumping chamber having a predetermined volume, and a diaphragm means for defining at least a pumped fluid portion of the pumping chamber, the diaphragm means comprising:
a first diaphragm having a first surface area against which the variable gas pressure is applied; and
a pressure increasing means which comprises a first member having a member surface with a raised region whose cross-sectional area in the plane of the member is smaller than the first surface area, the raised region having a shape substantially the reciprocal of the shape of the pumping chamber surface in the pumped fluid portion, and a second diaphragm positioned for defining an enclosed volume comprising the pumped fluid portion of the pumping chamber, the second diaphragm positioned adjacent to the raised region for being depressed by the raised region to decrease the volume of the pumped fluid portion of the pump chamber in response to an increase in the pressure of the pumping fluid;
heater apparatus comprising a quantity of pumping fluid, a heating chamber for containing said quantity of pumping fluid, the heating chamber coupled for applying a force to the diaphragm to decrease the volume of the pumped fluid portion of the pumping chamber when the pressure of the quantity of pumping fluid increases, and a heater in the heating chamber for heating the quantity of pumping fluid and thereby increasing the pressure and volume of the quantity of pumping fluid; and
heater control means for providing electrical pulses for intermittently energizing the heater.

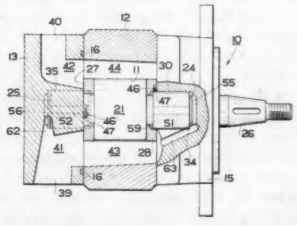
4,265,601
THREE VALVE PRECISION PUMP APPARATUS WITH HEAD PRESSURE FLOWTHROUGH PROTECTION
Harold Mandroian, 2137 Los Amigos, La Canada, Calif. 91011
Continuation-in-part of Ser. No. 939,924, Sep. 5, 1978. This application Jul. 26, 1979, Ser. No. 60,955
Int. Cl.[3] F04B *21/02, 17/00, 43/02*
U.S. Cl. 417—379 **8 Claims**

1. A pumping apparatus for moving a pumped fluid from a reservoir to a destination in response to variations of the pressure of a pumping fluid comprising:
a pump member means having
an input port for receiving pumped fluid from the reservoir,
an exit port for expelling pumped fluid to the destination,
a pumping chamber,
an input passageway,
an exit passageway, and
a passageway network between the input passageway and the exit passageway;
a diaphragm means bifurcating the pumping chamber for defining a first chamber volume for receiving the pumped fluid and a second chamber volume for receiving the pumping fluid,
variable pressure means for intermittently varying the pressure of the pumping fluid for alternately increasing the second chamber volume to increase the pressure of the pumped fluid and expel it from the first chamber volume and decreasing the second chamber volume to decrease the pressure of the pumped fluid and draw it into the first chamber volume;
first valve means positioned between the input passageway and the passageway network and responsive to the pressure of the pumped fluid in the first chamber volume;



second valve means positioned in the passageway network for being responsive to the pressure of the pumped fluid in the first chamber volume, the first valve means being opened when the second valve means closes and the first valve means being closed when the second valve means opens in response to the variations in pumping fluid pressure;
third valve means coupled between the exit passageway and the second valve means in the passageway network for preventing pumped fluid flow-through the pump in response to a pressure head at the input or exit ports, the third valve means coupled for closing at least one of the first, second, or third valves in response to the head pressure at the input and exit ports.

4,265,602
GEAR PUMP WITH LOW PRESSURE SHAFT LUBRICATION
Hideo Teruyama, Shobu, Japan, assignor to Kayabakogyokabushikikaisha, Tokyo, Japan
Filed Nov. 15, 1978, Ser. No. 960,940
Int. Cl.[3] F04C *2/18, 15/00*
U.S. Cl. 418—1 **5 Claims**



1. A method of lubricating trunnions and bearings of a gear pump, comprising the steps of rotating gears of said gear pump in such a way that liquid under low pressure may be drawn through a low pressure port extended substantially at right

angles to the axes of gear trunnions toward one end thereof and then be redirected to flow through a low pressure passage extended in parallel with said axes of said trunnions so as to be impounded in the spaces between the teeth of said gears; and utilizing the kinetic energy due to the flow velocity of said liquid under low pressure in such a way that part of said liquid under low pressure may be forced into lubrication or oil passages through communication passages which open at the closed end of said low pressure port adjacent to the inlet to said low pressure passage and at the closed end of said low pressure passage and return said liquid under low pressure to said low pressure passage after it has been distributed to bearings of said gears, thereby effecting forced lubrication and cooling of said trunnions of said gears.

4,265,603
REFRIGERANT COMPRESSOR FOR AIR CONDITIONING OF VEHICLES

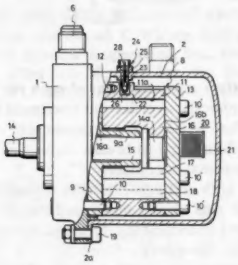
Tsuneyuki Chiyoda, and Masami Ohtani, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1979, Ser. No. 28,890

Claims priority, application Japan, Apr. 28, 1978, 53/56235[U]

Int. Cl.³ F04C *15/04*

U.S. Cl. 418—2 **13 Claims**



1. A refrigerant compressor for use in an air conditioner for vehicles, which comprises:

a refrigerant intake port;

a refrigerant delivery port;

a rotary shaft arranged to be rotated by an associated engine;

a rotor secured to said rotary shaft for rotation therewith, the rotor having a plurality of slits formed in an outer peripheral surface thereof;

a plurality of vanes radially movably inserted in said slits;

a housing accommodating said rotor and said vanes, the rotor, the vanes and the housing cooperating to define pump working chambers between them, the housing having a peripheral wall formed with a blind hole opening in an outer peripheral surface thereof and terminating in the interior of said wall;

a covering enclosing said housing, the covering having an inner peripheral wall thereof, part of said inner peripheral wall cooperating with an outer peripheral wall of said housing to define a refrigerant delivery chamber which is in communication with both the interior of the housing and said refrigerant delivery port, said covering having a through hole arranged in alignment with said opening;

a support member inserted in said hole of said housing, said support member extending through said through hole of said covering outwardly thereof;

a temperature sensor arranged in contact with the bottom of said hole of said housing and supported by said support member; and

sealing means provided around the support member for keeping airtightness between said support member and said covering.

4,265,604
ROTARY PNEUMATIC TOOL WITH VALVE-CLOSING PIN ACTUATED UPON OVERSPEED

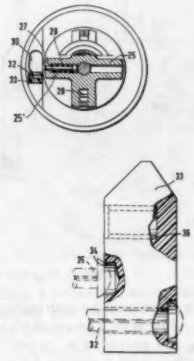
Ernst Dreher, Reutlingen; Reinhold Stroezel, Leinfelden-Echterdingen; Siegfried Spittler, Wiesenstetten, and Richard Wolf, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 28, 1979, Ser. No. 24,778

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821074

Int. Cl.³ F01C *21/12*; G05D *13/04*

U.S. Cl. 418—43 **10 Claims**



1. In a pneumatic tool, a combination comprising a fluid motor including a rotor; passage means connecting said rotor with a source of fluid under pressure; normally open valve means interposed in said passage means and movable to a closed position in which it interrupts the flow of fluid to said rotor; actuating means on said rotor operative in response to said rotor exceeding a predetermined speed of revolution, to move from a neutral into an actuating position in which it engages said valve means and moves the same to said closed position thereof, said valve means including a valve plate movable between an open and said closed position; said actuating means including a pin operatively connected to said rotor for rotation therewith and movable between said neutral and actuating positions relative to said rotor; and means for reinforcing said valve plate, said reinforcing means including a metallic reinforcing element pressed into said valve plate, said reinforcing element being formed as a cotter spring.

2. In a pneumatic tool, a combination comprising a fluid motor including a rotor; passage means connecting said rotor with a source of fluid under pressure; normally open valve means interposed in said passage means and movable to a closed position in which it interrupts the flow of fluid to said rotor; actuating means arranged on said rotor and operative in response to said rotor exceeding a predetermined speed of revolutions to move from a neutral into an actuating position, said valve means including a valve plate movable between an open and said closed positions, said actuating means including a pin operatively connected to said rotor for rotation therewith and movable between said neutral and actuating positions relative to said rotor, said valve plate being located adjacent said rotor so that when said pin is in said actuating position it engages said valve plate during the rotation of said rotor to thereby move said valve plate to said closed position; means for preventing movement of said pin between said neutral and actuating positions until the speed of revolutions of said rotor exceeds said predetermined speed level; and means for preventing spontaneous movement of said plate between said open and closed positions, said valve plate being provided with a hole, and said spontaneous-movement-preventing means including a stationary pin engageable with said hole on said

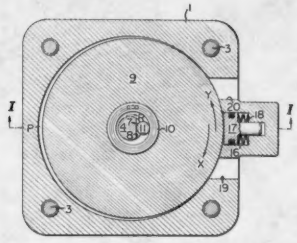
valve plate with a snapping action when said valve plate is in said open position.

4,265,605

ROTARY PUMP WITH WEDGE ROLLER ECCENTRIC MEANS DRIVING THE ROTOR

Kazuichi Ito, 4, 1463-banchi, Ichibu-cho, Ikoma-shi, Nara-ken, Japan

Filed Mar. 20, 1979, Ser. No. 22,265
Claims priority, application Japan, Apr. 11, 1978, 53/42824
Int. Cl.³ F04C *18/00, 27/00*
U.S. Cl. 418—63 **6 Claims**



1. A rotary pump comprising: a pump casing having a cylindrical chamber formed therein; a pump shaft rotatably carried by said pump casing and provided at its portion extending in said cylindrical chamber with a groove having a bottom surface extending in parallel with the central axis of said pump shaft; an eccentric rotor surrounding said pump shaft at a portion of the latter where said groove is formed and adapted to make an eccentric movement in relation to said pump shaft while keeping a contact with the inner peripheral surface of said cylindrical chamber; a roller bearing positioned coaxially within a central bore of said rotor; wedge roller means disposed between said bottom surface of said groove and said bearing for imparting through said bearing an eccentric movement to said bearing and thus to said rotor, said wedge roller having a diameter of greater extent than the depth the groove; a partition means adapted to divide a pump chamber formed between said pump casing and said eccentric rotor in a fluid-tight manner into a suction chamber and a delivery chamber; and a suction port and a delivery port formed in said pump casing and communicating with said suction chamber and said delivery chamber, respectively.

4,265,606

FOSITIVE DISPLACEMENT PULSE FREE ROTARY FLUID PUMP

Edward L. Lehnus, 5549 Westwood Northern Blvd., Cincinnati, Ohio 45211

Filed Nov. 21, 1979, Ser. No. 96,451
Int. Cl.³ F04C *2/16*
U.S. Cl. 418—201 **4 Claims**

1. A positive displacement rotary pump for providing substantially pulse-free fluid transfer comprising:

a pump casing having a pair of parallel end walls spaced by a continuous side wall enclosing a pair of substantially circular intersecting pump chamber cavities;

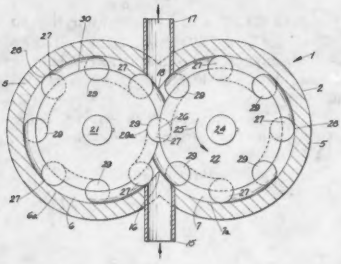
an inlet port extending through said side wall and coaxial with the points of intersection of said cavities;

an outlet port extending through said side wall opposite to and coaxial with said inlet port;

a substantially cylindrical rotor member rotatably mounted by said end walls within each of said cavities such that the outer peripheries of said counterrotating rotor members are in rolling contact with each other at a point substantially tangential with the axes of said inlet and outlet ports, each of said rotor members including:

a plurality of equally spaced parallel semi-cylindrical helically arranged ribs extending outwardly from the outer periphery of said rotor member a distance equal to the radius of said rib, the outermost edges of said ribs making a sliding seal with the inner surface of said side walls between said inlet and outlet ports;

a semi-cylindrical helically arranged flute positioned in parallel equidistant relationship between each pair of adjacent ribs, each of said flutes extending to a depth equal to the radius of the flute, the rib of one rotor member intermeshing with the flute of the other rotor member to form a substantially fluid-tight seal as said rotor members are rotated, the ribs and flutes of each rotor member being pitched in opposite directions, the pitch of said ribs and flutes being in opposite directions



such that the outermost point of each rib adjacent one side wall directly overlies the innermost point on the adjacent flute adjacent the opposite side wall to insure that a rib-flute pair just breaks contact as the adjacent rib-flute pair makes contact.

a gear coaxial with and non-rotatably affixed to said rotor member, said gears being positioned outside of the fluid flow path and intermeshing to drive one of said rotor members from the other;

means for providing a seal between the outer faces of said rotor member and the adjacent inner surfaces of said end wall as said rotor member is rotated; and

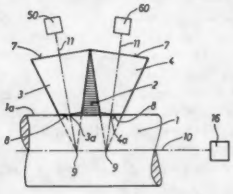
means associated with one of said rotor members for driving said rotor members in a direction to transfer fluid in a pulse-free manner from said inlet port to said outlet port.

4,265,607

APPARATUS FOR MANUFACTURING A PLASTIC INSULATOR EQUIPPED WITH HELICAL-SHAPED SHIELDS

Hans Kläy, CH-1171 Bougy-Villars, Switzerland

Filed Feb. 5, 1980, Ser. No. 118,758
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1979, 2905874
Int. Cl.³ B29C *23/00*; B29D *9/00, 31/00*
U.S. Cl. 425—113 **4 Claims**



1. An apparatus for manufacturing a plastic insulator provided with substantially helical-shaped shields which radially protrude from an insulator rod, comprising:

two oppositely rotating substantially truncated conical-shaped rolls;

said rolls forming therebetween and the outer surface of a neighboring insulator rod an infeed gap for the infeed of a shield-forming material which is to be infed in kneadable condition in transverse direction with respect to the rolls;

said rolls being arranged at one side of the insulator rod and the imaginary cone apexes of the substantially truncated conical-shaped rolls being located essentially at the lengthwise axis of the insulator rod;

drive means for rotating the rolls about their roll axes and the insulator rod about its lengthwise axis;

means for imparting a relative movement between the pair of rolls and the insulator rod in the direction of the lengthwise axis of the insulator rod or essentially parallel thereto in order to simultaneously form the shield and to apply the shield to the insulator rod.

4,265,608

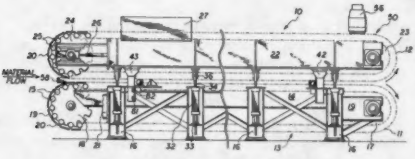
ENDLESS BELT MOLDING APPARATUS

Malik Tunador, and Manoj K. Wangu, both of Pittsburgh, Pa., assignors to Tunador Engineering, Inc., Oakdale, Pa.

Filed Jun. 30, 1980, Ser. No. 164,804

Int. Cl.³ B30B *3/00*; B29C *3/06*; B30B *15/16*

U.S. Cl. 425—149 **9 Claims**



1. An endless belt molding apparatus comprising:

a. first and second adjustably spaced rotatable endless belts, said first and second belts being mounted to first and second frame members and said first frame member including support means to support said second frame thereon during molding;

b. means for vertically adjusting said second frame member relative to said first frame member, said means for adjusting being mounted to said first and second frames member;

c. a plurality of sensing means mounted on selected support means of said first frame member to support in combination with said support means said second frame member during molding operation, said sensing means providing an output signal proportional to the pressure asserted by said second frame during contact therewith;

d. drive means including first and second belt drive sprockets operably connected to respective first and second belts and rotatably mounted to said first and second frames; first and second speed reducers operably connected to said respective drive sprockets; a splined, vertically extendable drive coupler connected to said first and second speed reducers; and motor means operably connected to one of said first or second speed reducers for driving said reducer, said drive means including a torque take-up means between said first speed reducer and said first frame,

e. control means for operating said means for vertically adjusting said second frame, said control means being responsive to said output signals from said sensing means.

4,265,609

METHOD AND APPARATUS FOR MOLDING CONCRETE BLOCK PRODUCTS

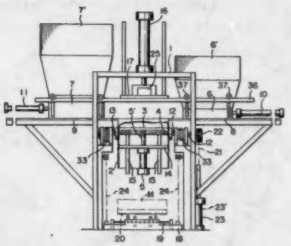
Yutaka Kitahara, 2329-1 Abe, Ochiaicho, Takahashi-shi, Okayama, Japan

Filed Dec. 13, 1978, Ser. No. 968,904

Claims priority, application Japan, Jul. 19, 1978, 53-87116; Jul. 19, 1978, 53-87117

Int. Cl.³ B30B *9/28*

U.S. Cl. 425—260 **10 Claims**



1. A concrete block molding apparatus comprising: an upright frame; an upright molding box defining a vertical mold cavity for molding a concrete block, said mold cavity being open at one vertical end thereof; means rotatably mounting said molding box on said frame for rotation about a horizontal axis and means for rotating said molding box about said horizontal axis through an arc of about 180° between a first position in which said one vertical end of said mold cavity opens upwardly and a second position in which said one vertical end of said mold cavity opens downwardly; a vertically reciprocable bottom plate disposed within said molding box, means for moving said bottom plate vertically relative to and within said molding box toward and away from said open end of said mold cavity between a plurality of vertically spaced positions in said mold cavity, said bottom plate being rotatable about said horizontal axis with said molding box, said bottom plate defining the bottom wall of said mold cavity in said first position of said molding box, said bottom plate defining the upper wall of said mold cavity in said second position of said molding box; a plurality of movable feed boxes alternately movable above the upper end of said mold cavity in said molding box when said molding box is in said first position for feeding concrete mixes into said mold cavity; and press plate means movably supported on said frame above the upper end of said molding box for pressing downwardly on the upper surface of a charge of concrete mix in said mold cavity in said molding box when said molding box is in said first position in order to mold said charge, whereby a concrete block can be molded when said molding box is in said first position and then said molding box can be inverted so that the concrete block can be ejected downwardly from said mold cavity by moving said bottom plate downwardly in said mold cavity.

4,265,610

PRESS FOR COMPRESSING REFRACTORY MATERIAL AND INCLUDING A QUICK CHANGE MOLD BOX

Robert J. Dorsey, Chicago, Ill., assignor to Wehr Corporation, Milwaukee, Wis.

Filed Dec. 4, 1978, Ser. No. 965,794

Int. Cl.³ B29C *1/16*

U.S. Cl. 425—411 **19 Claims**

1. A press for molding refractory material and comprising:

a bed,

a plunger assembly supported by said bed and including one upwardly projecting plunger,

a mold table supported for movement toward and away from said bed, said mold table including a central aperture,

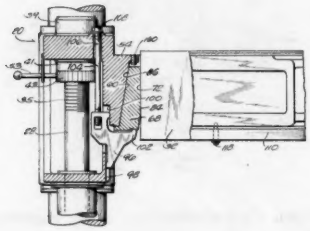
a mold box supportable in said central aperture, said mold

box including at least one mold cavity for receiving said plunger, said mold box and said central aperture of said mold table forming at least two downwardly diverging cavities therebetween,

means for releaseably wedging said mold box in said central aperture when said mold box is housed in said central aperture and when said mold table is forced downwardly with respect to said mold box and for selectively releasing said mold box when said mold box is restrained against upward movement and said mold table is forced upwardly with respect to said mold box, said means for releaseably wedging said mold box including at least one wedge positionable in one of said downwardly diverging cavities and clampingly engaging said mold box in response to downward movement of said mold table with respect to said mold box until said mold box is housed in said central aperture and said wedge being movable away from said mold box to release said mold box in response to upward movement of said mold table with respect to said mold box,

means for selectively restraining said mold box from upward movement and,

means for causing upward movement of said mold table with respect to said mold box.



4,265,611

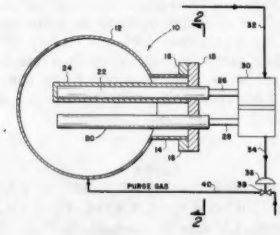
CONTROL SYSTEM FOR PURGE GAS TO FLARE

Robert D. Reed, and Merle A. Bengston, both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Mar. 15, 1979, Ser. No. 20,920

Int. Cl.³ F23D *13/20*

U.S. Cl. 431—3 **7 Claims**



1. In a flare gas system for the demand burning of waste gases, apparatus for controlling the flow of purge gas into the flare gas line, comprising;

(a) a source of purge gas connected to a purge gas line, which is connected to said flare gas line; and means for controlling the flow of purge gas in said purge gas line;

(b) means for detecting a change in temperature comprising; a fast response temperature sensor means positioned in said flare gas line, a slow response temperature sensor means positioned in said flare gas line close to said fast response sensor means; and

(c) control means responsive to both said fast response and said slow response sensor means to control said flow of purge gas.

4,265,612

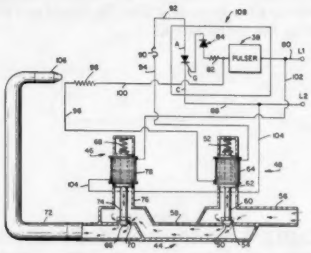
INTERMITTENT PULSING GAS IGNITION SYSTEM

Pat Romanelli; Robert J. Romanelli, both of Harrington Park, N.J., and Richard W. Shutt, Central Square, N.Y., assignors to Ram Products, Inc., Northvale, N.J.

Filed Mar. 8, 1979, Ser. No. 18,795

Int. Cl.³ F23N *5/00*

U.S. Cl. 431—66 **14 Claims**



1. A pulsing ignition system for gas fired devices having a source of electrical power, a burner provided with an outlet, and a fuel valve for controlling the flow of gas to said burner; said system comprising

an electrical ignition element of resistance material adaptable for connection to said source of electrical power, and located in proximity to said burner outlet for igniting gas flowing thereto when said ignition element is energized and brought to a gas ignition temperature,

electrical pulse generating means in circuit with said electrical ignition element, said pulse generating means having a predetermined on/off cycle and being adapted to provide energizing current to said electrical ignition element during said on cycle, of a value sufficient to energize and heat said electrical ignition element to a gas ignition temperature, and current of reduced value during said off cycle thereby permitting said electrical ignition element to cool during said off cycle,

said pulse generating means including a gate controlled rectifier, and a flip flop circuit having its output connected to the gate of said gate controlled rectifier,

and electrical control means connecting said fuel valve and said electrical pulse generating means for operation of said electrical pulse generating means when said fuel valve is open.

4,265,613

SAFETY DEVICE FOR AN OIL BURNER

Rolf Oppenberg, Wesel, Fed. Rep. of Germany, assignor to Deutsche Babcock Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 17,233

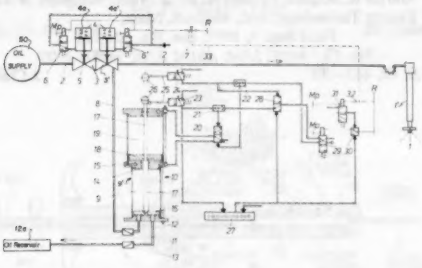
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 2809962

Int. Cl.³ F23D *11/38*

U.S. Cl. 431—121 **5 Claims**

1. A safety device for an oil burner having an oil lance, comprising, a fuel oil supply line connected to said oil lance, a fuel oil shutoff valve in said supply line, a pump comprising a pump housing having a drive cylinder space, a suction piston space, a double-acting drive piston movable in said drive cylinder space, a suction piston movable in said suction piston space, a piston rod connected to said drive piston and suction

piston having at least a portion disposed therebetween, a suction line extending between said suction space and said shutoff valve in said supply line and control means connected between said burner lance and said fuel oil shutoff valve in said supply



line and connected between said pump and said burner lance to move said drive piston to cause movement of said suction piston and withdrawal of the oil through said supply line from said burner lance when said burner is shut off.

4,265,614

COMBUSTION APPARATUS

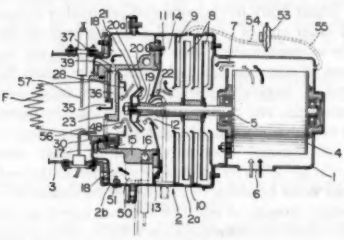
Hajime Satoda, Yamatokoriyama; Hiromi Ohta, and Yoshiyuki Ushirokajitani, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 28, 1979, Ser. No. 52,984

Claims priority, application Japan, Jun. 28, 1978, 53-78859; Jun. 28, 1978, 53-78860

Int. Cl.³ F23D *13/14, 7/00*

U.S. Cl. 431—329 **13 Claims**



1. A combustion apparatus comprising:

i. a burner case;

ii. means for producing a mixture of fuel and air to be burned;

iii. a fuel supply for feeding said fuel to said producing means;

iv. means for supplying primary air to said producing means;

v. means for supplying secondary air; and

vi. a burner head unit, disposed in said burner case, including a secondary air ejecting nozzle and flame port means surrounding said secondary air ejecting nozzle, said burner head unit burning said mixture fed from said producing means so as to form a flame having an inner lateral surface and an outer lateral surface, said secondary air ejecting nozzle being arranged to feed a laminated flow of said secondary air into contact with the inner lateral surface of said flame.

4,265,615

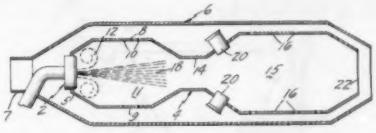
FUEL INJECTION SYSTEM FOR LOW EMISSION BURNERS

Robert P. Lohmann, South Windsor, and Stanley J. Markowski, East Hartford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 11, 1978, Ser. No. 968,652

Int. Cl.³ F23D *15/02*

U.S. Cl. 431—353 **10 Claims**



1. A burner construction including:

an inlet end cap having at least one central opening therein;

side walls extending downstream from the end cap and having openings therein, said walls converging in a downstream direction to form a throat spaced from the end cap, and diverging again downstream of the throat;

an annular nozzle in the opening in the end cap for directing fuel at a large angle relative to the axis of the burner to cause primary combustion in an annulus closely adjacent to the end cap; and

a second nozzle within the annulus of the first nozzle directing fuel at a small angle and substantially parallel to the axis of the burner through the primary combustion, this small angle and the spacing of the throat from the end cap being such that substantially all the fuel from this nozzle passes through the throat without impingement on the converging walls for secondary combustion downstream of the throat.

4,265,616

PROCESS FOR PRODUCING A HEAT-WEAKENED STRIP IN POLYOLEFIN FILM

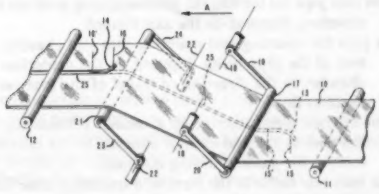
Brian L. Hetherington, Kingston, Canada, assignor to Du Pont Canada, Inc., Montreal, Canada

Filed Oct. 18, 1979, Ser. No. 86,265

Claims priority, application Canada, Oct. 19, 1978, 313759

Int. Cl.³ F27B *9/28*

U.S. Cl. 432—8 **6 Claims**



1. A process for heat-weakening cross-lapped oriented polyolefin film, comprising:

(a) pulling a web of a cross-lapped oriented polyolefin film, having a thickness between 38 μm and 150 μm, in a longitudinal direction past first and second heat sources, said first and second heat sources being spaced apart from and in line with one another along a line parallel to the direction of travel of the web;

(b) directing heat from the first heat source to a transversely narrow area on one side of the film;

(c) directing heat from the second heat source to a second transversely narrow area on the other side of the film, said

second transversely narrow area being longitudinally in line with said first transversely narrow area;

(d) controlling the heat from the first and second heat sources to effect heat-weakening of the film along a strip passing through the first and second transversely narrow area to such an extent that the transverse tensile breaking strength at the heat-weakened strip is in the range of 20 to 100 Newtons per centimeter of length of film.

4,265,617

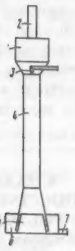
APPARATUS FOR SPRAY DRYING OF LIQUID AND PASTE-LIKE MATERIALS

Georgy P. Piterskikh, ulitsa Garibaldi, 4, korpus 1, kv. 11; Stanislav A. Sukhov, Gostinichny proezd, 4A, kv. 71; Vladimir B. Slobodchikov, ulitsa Tukhachevskogo, 33, kv. 21, all of Moscow; Ivan S. Sutyagin, Krasnoperekopsky raion, poselok Armyansk, I mikroraion, 10, kv. 62, and Albert M. Terentiev, Krasnoperekopsky raion, poselok Armyansk, I mikroraion, 3, kv. 97, both of Krymskaya oblast, all of U.S.S.R.

Filed Oct. 18, 1979, Ser. No. 86,071

Int. Cl.[3] **F27B** *15/00*

U.S. Cl. 432—58 **8 Claims**



1. An apparatus for spray drying liquid and paste-like materials, comprising:

a chamber for combustion of a gaseous drying medium passing therein in a pulsating flow;

an inlet pipe for feeding the gaseous drying medium into said chamber, disposed on the axis thereof;

a pipe for injecting said materials into said chamber, a portion of the pipe being disposed on the centerline of said chamber in the direction of travel of the gaseous drying medium flow;

an exhaust pipe mounted in a coaxial relationship to said chamber at the end thereof opposite to the inlet pipe for feeding the gaseous drying medium;

at least one baffle in the form of a truncated cone facing by its smaller base the interior of said chamber and positioned in a coaxial relationship thereto, at least the first baffle in the direction of travel of the material flow being positioned directly in said exhaust pipe in a spaced relationship thereto to define a gap therebetween;

at least one toroidal resonator chamber encompassing said baffle, at least the first resonator chamber in the direction of travel of the material flow partly encompassing also the exhaust pipe and communicating with the inner space thereof through the gap between the baffle and said exhaust pipe; and

a passage for withdrawing the unatomized material from the inner space of the resonator chamber, provided in the wall thereof.

4,265,618

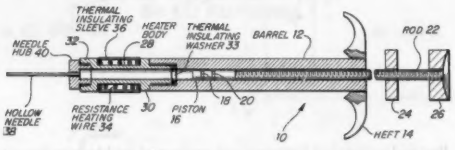
ELECTRICALLY HEATED ENDODONTIC SYRINGE FOR INJECTING THERMOPLASTIC MATERIAL INTO A ROOT CANAL CAVITY

Sheldon B. Herskovitz, Acton; Jay Marlin, Leominster, and Martin R. Stiglitz, Lexington, all of Mass., assignors to Solar Energy Technology, Inc., Bedford, Mass.

Filed Sep. 9, 1977, Ser. No. 831,714

Int. Cl.[3] **A61C** *5/04;* **A61M** *5/18;* **H05B** *3/00*

U.S. Cl. 433—32 **2 Claims**



1. A dental syringe for injecting a heated thermoplastic material into a root canal cavitity comprising:

a hollow syringe barrel for holding a supply of thermoplastic material and having a plunger therein, the syringe barrel and plunger being of materials of low coefficient of thermal conductivity of less than about 20 Btu/(hr)(ft^2)(°F./ft), and a plunger operating mechanism associated therewith extending into one end of the barrel for pushing said plunger to the other end to eject thermoplastic material from said other end of the barrel;

a heater body of a material of high coefficient of thermal conductivity of at least about 200 Btu/(hr)(ft^2)(°F./ft) and supporting an electrical resistance heating element for heating the heater body and thermoplastic material therein, and having a bore therein concentric with the interior of said barrel and of the same internal diameter, the heater body having one end removably connected to said other end of said barrel with the bore of the heater body communicating with the interior of the barrel by means of complementary threads on the heater body and barrel, a thermally insulating washer being positioned between the end of the heater body and the barrel;

a high conductivity hub of a material having a high coefficient of thermal conductivity of at least about 200 Btu/(hr)(ft^2)(°F./ft) removably attached to the end of said heater body opposite to said barrel by means of complementary threads on said hub and said barrel and having a bore therein in communication with the bore in said heater body; and

a thin, elongated, tubular needle having a length of at least about one inch, and sized within the range of sizes from that of an 18 gauge needle to that of a 30 gauge needle, attached to said high conductivity hub opposite to the heater body in communication with said bore of said hub, the needle being manually malleable and suitable for insertion into a root canal cavity to inject thermoplastic material into the root canal cavity, said needle being fabricated from a material which has a coefficient of thermal conductivity of at least about 200 Btu/(hr)(ft^2)(°F./ft), and the hub providing a high conductivity thermal path from the heater body to the needle, the heater providing sufficient heat to heat the end of the needle adjacent said hub to a temperature which is sufficient to maintain the entire length of said needle above about 230° F. at which said thermoplastic material will flow but below the temperature at which the material is thermally decomposed.

4,265,619

METHOD AND APPARATUS FOR PROCESSING DENTAL MODELS

John L. Lucki, Edison, N.J., and Alan B. Naha, Parma, Ohio, assignors to Dental Essentials, Inc., Edison, N.J.

Filed Jul. 9, 1979, Ser. No. 55,502
Int. Cl.³ A61C *11/00*
U.S. Cl. 433—54 **28 Claims**

13. A system for processing one or more hardened castings for teeth and jaws which comprises in combination:

an articulator comprising upper and lower platforms hingedly connected to simulate the human jaw;

a prefabricated precision molded combination including:

a mounting plate having opposite major surfaces, one said major surface designed to support said castings in bonded relation thereto, and the other said major surface being embossed with a first complex configured geometric pattern having a plurality of repetitive facets;

a lower mating plate having opposite major surfaces, one said major surface being embossed with a second complex configurated geometric pattern having a plurality of repetitive facets constructed to precisely mate with the facets of said first configured geometric pattern in fixed interlocking registration when said mounting plate and said lower mating plate are in a preselected spatial relationship, so that the principal planes of said mounting plate and said lower mating plate are locked in substantially parallel relation;

the other major surface of said lower mating plate being constructed to be supported on one of the platforms of said articulator.

4,265,620

SYSTEM FOR SIMULATING THE CONDYLE MOVEMENTS

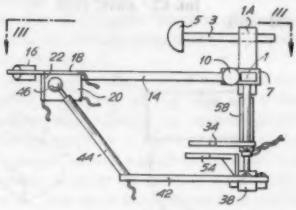
Gianni Moro, Viale Nazario Sauro 81, and Mario Picchi, Corso Mazzini 18, both of Leghorn, Italy

Filed Jul. 31, 1979, Ser. No. 62,330
Claims priority, application Italy, Aug. 8, 1978, 9556 A/78
Int. Cl.³ A61C *19/04*
U.S. Cl. 433—69 **6 Claims**

1. A system for simulating the condyle movements, comprising a sensing apparatus and a reproducing apparatus which imposes the mastication movements on two arch moulds as determined by the sensing apparatus, wherein:

said sensing apparatus comprises a structure for fitting to the cranium and thereby to the maxillary arch, a structure engageable with the mandible arch, means for generating a signal representing the relative distance between points of the two structures and the front of the arches, at a distance from the condyles, and two induction means each disposed adjacent to a respective one of the two condyles, each said induction means comprising a group of three flat mutually perpendicular reference electrodes mounted on one of the structures, and a ball mounted on the other structure and cooperating with the electrodes in such a manner that a set of three relative positioning signals is generated by induction between the ball and the individual electrodes during the free movements; and

said reproducing apparatus comprises two structures movable relative to each other, a base supporting one of said



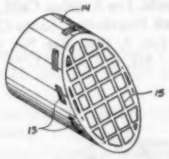
structures, and three extendable articulated members supporting the other of said structures, two of said members each having an end displaceable in two directions under the control of two of the signals of the two sets of three signals, the third signal controlling the extension of said members.

4,265,621

TIP FOR DENTAL ASPIRATOR

Kenneth E. McVey, Paulsen Medical and Dental Bldg., Spokane, Wash. 99201

Filed Oct. 19, 1979, Ser. No. 86,583
Int. Cl.³ A61C *17/04*
U.S. Cl. 433—91 **1 Claim**



1. The removable protective tip for placement over the axial outer end of a dental aspirator in the form of a rigid cylindrical tube with one end connected to a flexible hose and the remaining end having an outer edge, comprising:

a cylindrical sleeve molded of thermoplastic resin, said sleeve having an inner diameter substantially equal to the outer diameter of the tube;

one end of the sleeve being open;

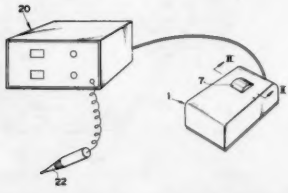
the remaining end of the sleeve being partially closed by a transverse open-mesh screen molded integrally with said sleeve, said screen being located in a plane complementary to the plane of the outer edges of the tube, said screen being recessed inwardly from the outer edge of the sleeve about its remaining end;

and a plurality of open transverse vents formed through the sleeve immediately adjacent the screen, said vents being formed as inwardly directed notches through the outer edge of the sleeve and overlapping the outer surface of the screen.

4,265,622
FOOT CONTROLLER FOR ELECTRICAL DENTAL INSTRUMENTS

Hiroshi Hasegawa, Tokyo, Japan, assignor to Tokyo Engine Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1979, Ser. No. 38,003
Claims priority, application Japan, May 17, 1978, 53-66299[U]
Int. Cl.[3] A61C 1/02
U.S. Cl. 433—101 1 Claim

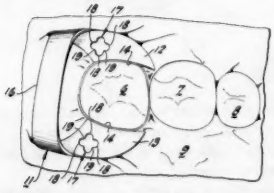


1. A foot controller for electrical dental instruments, comprising in combination: a case consisting of a body and a cover having at its upper portion an opening; a rotor shaft having no self returning force at all and supported within said case horizontally by means of a bearing member; a roller having a disk fixed to said rotor shaft and a flange extending along the outer periphery of said disk, an upper portion of said outer periphery of said flange protruding through said opening of said cover; a gear installed in a space defined by said disk and said flange of said roller; a rotary variable resistor installed in said case; a pinion fixed to a rotor shaft of said variable resistor and installed in a position to engage with said gear in said space defined by said disk and said flange of said roller; and a cord connected to said variable resistor and having at its forward end a plug.

4,265,623
CLAMP FOR A DENTAL DAM

Kenneth B. Soelberg, Menlo Park; Marvin M. Stark, Los Altos Hills, both of Calif.; Tommy H. Thompson, Missoula, Mont., and Akia Yamaguchi, Los Angeles, Calif., assignors to Marvin M. Stark Research Foundation, Santa Clara, Calif.

Filed Feb. 8, 1980, Ser. No. 120,009
Int. Cl.[3] A61C 5/12
U.S. Cl. 433—139 6 Claims



1. A clamp for a dental dam of flexible material adapted at least partially to surround and extend along the surface of a tooth, said clamp comprising:

a. a substantially C-shaped springy member including a pair of lateral, substantially planar wings adapted to abut the lateral portions of said dam;

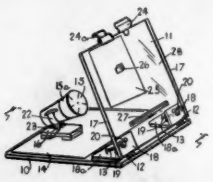
b. a bridge upstanding from and joined to said wings; and,

c. means defining a pair of tool apertures, one in each of said wings, the margins of each of said apertures having a shape and size such that the nose of a tool inserted therein can be moved to a number of different tool positions in the plane of said wings for close engagement with at least a portion of said margins in each of said different tool position.

4,265,624
MAGNETIC TRACING STAND

Lester S. Krulwich, 241 Central Park West, New York, N.Y. 10024

Filed Jan. 15, 1980, Ser. No. 112,186
Int. Cl.[3] B43L 5/02
U.S. Cl. 434—88 7 Claims

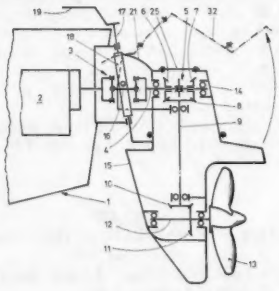


1. A magnetic tracing stand comprising a thin, fairly rigid transparent sheet fastened to a rectangular magnetically attractable base, said transparent sheet slanting adjustably backwards, and a light member adjustably mounted on a magnetic base capable of adhering magnetically and movably to said magnetically attractable base and having the light member focus its light on and through said transparent sheet permitting tracing on the other side of said transparent sheet.

4,265,625
Z-DRIVE FOR WATERCRAFTS

Johann Eichinger, Vaterstetten, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen-und Zahnradfabrik, Munich, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 971,731
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802541
Int. Cl.[3] B63H 5/12
U.S. Cl. 440—53 6 Claims



1. A Z-drive arrangement for watercrafts, comprising:

an inboard mounted engine having an output shaft;

an outboard mounted housing means located at the rear end of said watercraft and extending rearwardly therefrom and first means swingably suspending said housing means for movement about two orthogonally related axes located rearwardly of said rear end of said watercraft, said housing means including an upper housing part extending rearwardly from said rear end of said watercraft and a lower housing part, said lower housing part having a propeller shaft rotatably mounted therein, said upper housing part including second means defining an upwardly opening access opening extending generally the full horizontal length of said upper housing part;

drive means mounted in said housing means and including a first drive shaft extending parallel to said propeller shaft, a second drive shaft oriented at a right angle to said first shaft

and said propeller shaft, a first angle drive means including means defining a reversing mechanism connecting said first and second drive shafts, and a second angle drive means connecting said second drive shaft and said propeller shaft, said first drive shaft and said first angle drive means being mounted in said upper housing part, said first drive shaft being connected through a universal joint means to said output shaft of said engine so that said first and second drive shafts and said propeller shaft and the interconnecting first and second angle drive means move together with said housing means about said orthogonally related axes, said universal joint means, said first drive shaft and said first angle drive means all being accessible through said access opening; and

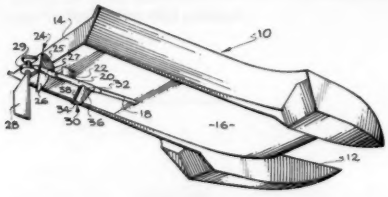
cover means removably secured across said access opening said cover means comprising a first cover covering said first drive shaft and said first angle drive means and a second cover covering said first cover and said universal joint means, wherein a handle of an oil dip-stick is provided adjacent said first cover, said second cover only covering said handle and wherein operating means for said reversing mechanism is also provided adjacent said first cover, said second cover only covering said operating means.

4,265,626

TRIMMING DEVICE TO CONTROL PROPELLER FORCES AFFECTING PROPELLER DRIVEN BOATS

John C. Perry, 3170 Falcan Dr., Carlsbad, Calif. 92008

Filed Mar. 8, 1979, Ser. No. 18,781
Int. Cl.[3] B63H *1/28*
U.S. Cl. 440—66 9 Claims



1. A boat trim device for a power boat having at least one propeller wherein at least one of said devices controls the direction of the propeller forces propelling said boat through the water comprising:

at least one substantially rectangular trim wedge device positioned upstream of said at least one propeller, said trim device having a first base end secured to said boat substantially in line with at least one blade of said propeller, said trim device being cantilevered from said secured first base end, a second tip end of trim device terminating substantially adjacent the tip of said blade of said propeller, said substantially rectangular trim wedge forms a sharp upstream leading edge from the first base end to the second tip end of said trim wedge, the downstream trailing edge being blunt, said trim wedge substantially forming a wedge shaped triangle when viewed in cross-section, said device serves to split said water creating a void air space through a section of a 360° track of said propeller, as a blade of said propeller rotates through said void, its driving force is substantially obviated while within said void space, thus substantially removing any undesirable propeller driving force affecting said boat as said boat is propelled through said water.

9. A method of controlling the direction of the forces developed by one or more rotating propellers of a propeller driven boat comprising the step of:

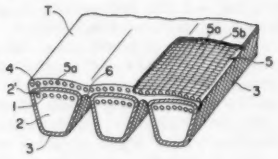
attaching one or more wedge shaped void producing means having a sharp upstream leading edge and a blunt downstream trailing edge adjacent one or more propeller drive shaft housings upstream of said one or more propellers in various positions around a clock face normal to said drive shaft housings to cause the rotating force producing propellers to lift, depress or move the stern of said boat to the left or right of any combination of these forces when a blade of said one or more propellers passes through said void created by said one or more void producing means.

4,265,627

POWER TRANSMISSION BELT

Junji Imamura, Kobe, Japan, assignor to Mitsuboshi Belting Ltd., Kobe, Japan

Filed Jun. 26, 1979, Ser. No. 52,273
Claims priority, application Japan, Apr. 5, 1979, 54-41679
Int. Cl.[3] F16G *5/08*
U.S. Cl. 474—267 7 Claims



1. In a power transmission belt having a plurality of V-belt bodies arranged side by side and driven simultaneously by a pulley, the upper surfaces of said V-belt bodies being connected with at least one ply of rubbered stretchable fabric, the improvement comprising:

said stretchable fabric including crimped nylon yarns subjected to wooly treatment and extending in a direction at an angle θ with respect to the longitudinal axis of the transmission belt, where $0° < \theta \leqq 40°$, whereby with $0° < \theta$ entire crimped nylon yarns will not be eliminated from said belt due to abrasion, and with $\theta \leqq 40°$ said crimped nylon yarns will enhance the longitudinal stretchability of said belt.

4,265,628

PROCESS FOR THE MANUFACTURE OF FIRE RESISTANT ACRYLIC POLYMER YARNS AND FILMS

Pier P. Rossi, Garlasco; Aldo Tempesti, Milan, and Aldo Filippi, Bergamo, all of Italy, assignors to SNIA Viscosa Societa' Nazionale Industria, Milan, Italy

Filed Jul. 27, 1979, Ser. No. 61,468

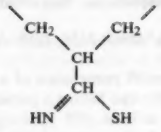
Claims priority, application Italy, Jul. 28, 1978, 26232 A/78

Int. Cl.[3] D01F *11/06, 6/38;* C08F *220/44*

U.S. Cl. 8—115.5 6 Claims

1. A process for the preparation of fire resistant formed bodies, such as yarns and filaments, of acrylonitrile polymers containing from 35 to 85% by weight of acrylonitrile units in the molecule, comprising the steps of:

(a) subjecting the acrylonitrile polymers to a sulfuration treatment in a heterogeneous phase by treatment with a 10 to 20% aqueous solution of an amine sulfide at a temperature of about 80° C. for a period of about 25 minutes to form a polymer of the formula:



(b) treating the sulfurated polymer formed during step (a) with an alkali metal hydroxide, at a temperature between 30° C. and 100° C.; and

(c) removing the alkali metal hydroxide from the sulfurated polymer before drying said polymer.

4,265,629

PROCESS FOR THE PRODUCTION OF RESIST EFFECTS ON POLYESTER/CELLULOSE MIXED FIBRE TEXTILES

Joachim Ribka, Offenbach am Main; Horst Tappe, Dietzenbach; Kurt Roth, Hofheim, and Hans-Jürgen Weyer, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

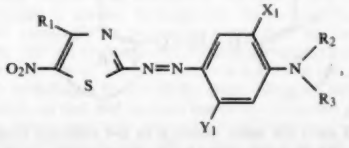
Filed Dec. 19, 1979, Ser. No. 105,204

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1978, 2856283

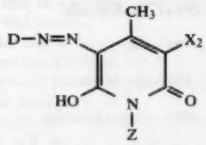
Int. Cl.[3] D06P *5/12*

U.S. Cl. 8—449 6 Claims

1. In the process for production of resist effects on textile materials of mixed fibers of polyester and cellulose comprising impregnating the materials with a dye liquor containing disperse dyestuffs and reactive dyestuffs which react with the resisting agents, drying or partially drying the padded materials and subsequently printing a resist paste on the material, and heat-treating the materials the improvement comprises the dischargeable disperse dyestuffs being of the formula



one of the tautomeric forms of the formula,



or disperse dyestuffs which are free from groups conferring solubility in water and which contain at least two carboxylic acid ester moieties wherein

R_1 is hydrogen, alkyl with 1–6 carbon atoms, cyano, trifluoromethyl or unsubstituted or substituted phenyl, the substituent being selected from the group consisting of chlorine, bromine, nitro and alkyl with 1–4 carbon atoms;

X_1 is hydrogen, chlorine, bromine, alkoxy with 1–4 carbon atoms, hydroxyalkoxy with 2–4 carbon atoms, alkoxyalkoxy with a total of 3–6 carbon atoms, unsubstituted or substituted alkyl with 1–4 carbon atoms, the substituent being selected from the group consisting of chlorine, bromine, cyano and hydroxyl;

Y_1 is hydrogen, chlorine, bromine, alkoxy with 1 to 4 carbon atoms, hydroxyalkoxy with 2–4 carbon atoms, alkoxyalkoxy with a total of 3–6 carbon atoms, —NH—CO—Y_2, —NH—SO_2—Y_2 or unsubstituted or substituted alkyl with 1 to 4 carbon atoms, the substituent being selected from the group consisting of chlorine, bromine, cyano and hydroxyl;

Y_2 is phenyl, amino, N-alkylamino with 1 to 4 carbon atoms, or alkyl with 1–4 carbon atoms unsubstituted or substituted by a substituent selected from the group consisting of phenyl, chlorine, bromine, cyano, hydroxyl, alkoxy with 1 to 2 carbon atoms and phenoxy;

R_2 is hydrogen, hydroxyalkyl with 2–4 carbon atoms, alkenyl with 3–6 carbon atoms or alkyl with 1–6 carbon atoms unsubstituted or substituted by chlorine, bromine, cyano, hydroxyl, alkoxy with 1–4 carbon atoms, hydroxyalkoxy with 1 to 4 carbon atoms, phenyl, alkanoyloxy with 2–4 carbon atoms, alkoxycarbonyl with 1 to 4 carbon atoms, hydroxycarbonyl with 2–4 carbon atoms, alkoxycarbonyl with 1 to 4 carbon atoms, hydroxycarbonyl with 2–4 carbon atoms, alkylaminocarbonyloxy with 2–4 carbon atoms or phenylaminocarbonyloxy;

R_3 is hydroxyalkyl with 2 to 4 carbon atoms, alkenyl with 3 to 6 carbon atoms, phenyl or unsubstituted or substituted alkyl with 1 to 6 carbon atoms, the substituent being selected from the group consisting of chlorine, bromine, cyano, hydroxyl, alkoxy with 1 to 4 carbon atoms, hydroxyalkoxy with 1–4 carbon atoms, phenyl, alkanoyloxy with 2 to 4 carbon atoms, alkoxycarbonyl with 1 to 4 carbon atoms, hydroxycarbonyl with 2 to 4 carbon atoms; and, if R_2 is hydrogen, R_3 may also be —$C(CH_3)_2$—$COOR_4$, methoxy-, ethoxy- or propoxy-alkyl with a total of 4 to 8 carbon atoms; wherein R_4 is alkyl with 4 to 8 carbon atoms;

D is phenyl unsubstituted or substituted by at least one substituent selected from the group consisting of chlorine, bromine, nitro, cyano, trifluoromethyl, thiocyano, lower alkyl, lower alkoxy, lower alkylcarbonyl, lower alkylsulphonyl, lower alkylcarbonylamino, carbamoyl, N-lower alkyl carbamoyl, N,N-di-lower alkyl carbamoyl, sulphamoyl, N-lower alkyl sulphamoyl, N,N-di-lower alkyl sulphamoyl, sulphamato, N-lower alkyl sulphamato, N,N-di-lower alkyl sulphamato, lower alkoxycarbonyl, lower alkoxy-lower alkoxycarbonyl, lower alkoxy-lower alkoxy-lower alkoxycarbonyl, hydroxy-lower alkoxy-lower alkoxycarbonyl and lower alkoxycarbonyl-lower alkyl;

X_2 is hydrogen, lower alkyl, carbamoyl, cyano, chlorine, bromine, nitroso, nitro, lower alkylcarbonyl, sulphamoyl, lower alkylsulphonyl, lower alkylcarbonylamino or lower alkoxycarbonyl; and

Z is hydrogen or lower alkyl;

the dischargeable reactive dyestuffs being those containing reactive moieties of the formula

$$-SO_2-CH_2-CH_2-hal$$

$$-SO_2-CH_2-CH_2-O-SO_3M$$

$$-NH-SO_2-CH_2-CH_2-O-SO_3M$$

$$-SO_2-CH=CH_2$$

wherein M is hydrogen or a metal cation and hal is halogen, and

the resist paste contains an alkali metal sulphite or an alkali metal bisulphite in combination with an alkali metal carbonate or alkali metal bicarbonate.

4,265,630

THERMOTRANSFER PROCESS FOR PRINTING SYNTHETIC FIBRE MATERIALS WITH MULTI-COLOR EFFECTS, AND CARRIER FOR PERFORMING THE PROCESS

Rolf Bäuerle, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Nov. 8, 1979, Ser. No. 92,780

Claims priority, application Switzerland, Nov. 17, 1978, 11830/78

Int. Cl.³ D06P *5/12*

U.S. Cl. 8—456 **14 Claims**

1. A thermal dry transfer printing process for printing synthetic fibre materials with multi-colour effects, in which process an intermediate carrier is printed, in any chosen sequence,

(1) in places with a reserve printing paste or reserve printing ink, and

(2) with a printing paste or printing ink for printing the ground, the reserve printing paste or ink (1) containing

(a) 10 to 25 percent by weight of a reserving agent which is pentamethylolmelaminetetramethyl ether or hexamethylolmelaminehexamethyl ether,

(b) 0.2 to 15 percent by weight of a thickener,

(c) 0 to 10 percent by weight of a non-reservable, sublimable disperse dye, which is a nitro-dye of the aniline series; an azo dye of the benzene series; or an anthraquinone, quinoline, pyrazolone, triazole, pyridone or styryl dye, each being convertable to the vapour state at 160° to 220° C.,

(d) 0 to 2.5 percent by weight of a curing catalyst and

(e) 50 to 90 percent by weight of water or an organic solvent and the printing paste or ink (2) for printing the ground containing (b) 0.2 to 15 percent by weight of a thickener, (e) 40 to 98 percent by weight of water or an organic solvent,

(f) 0 to 5 percent by weight of a binder and

(g) 1 to 20 percent by weight of a reservable dye which is a nitro dye of the aniline series; an azo dye of the benzene series; or an anthraquinone, quinoline, pyrazolone, triazole, pyridone or styryl dye which is convertable into the vapour state at 160° to 220° C.;

said non-reservable dye, (c) being devoid of an amino or hydroxyl group capable of reacting with the component (a) at 160° to 220° C. or contains a hydroxyl group, a secondary amino group or a primary amino group, each of which is bound to an aromatic nucleus and is inert to the component (a) the hydroxyl group being capable of forming adjacent carbonyl, azo or nitro groups, a hydrogen bridge with the primary amino group being sterically hindered by a substituent in the o-position and in which the reservable dye

(g) contains as a reactive amino or hydroxyl group, capable of reacting with the component (a) at 160° to 220° C. a hydroxyl group or an amino group each bound to an aromatic nucleus, or a secondary amino group present as a member of a pyrazolone, triazole or pyridone ring, the hydroxyl group being free from adjacent carbonyl, azo or nitro groups, and the primary amino group being free from substituents in the o-position, the intermediate carrier is dried, brought into contact with the fibre material to be printed, and both are then subjected to a heat treatment at elevated temperature, optionally with the application of pressure, until the unreserved dyes are transferred from the intermediate carrier to the fibre material, the intermediate carrier being thereupon separated from the printed fibre material.

4,265,631

AQUEOUS DYESTUFF PREPARATIONS OF WATER-INSOLUBLE OR SPARINGLY WATER-SOLUBLE DYES

Carl Becker, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,425

Claims priority, application Switzerland, Aug. 2, 1978, 8238/78

Int. Cl.³ D06P *1/56, 1/58, 1/613*

U.S. Cl. 8—471 **32 Claims**

1. An aqueous dyestuff preparation of a water-insoluble or sparingly water-soluble dye having a particle size of less than 10μ, which contains at least 10% by weight of water, 25 to 60% by weight, of a finely dispersed water-insoluble or sparingly water-soluble dye, 0.1 to 5% by weight of at least one water-soluble aminoplast precondensate and 0.5 to 5% by weight of a non-ionic copolymer of ethylene oxide and a further olefin oxide, said copolymer having an ethylene oxide content of at least 65% by weight and a molecular weight of more than 12,000.

4,265,632

PROCESS FOR THE COLORATION OF THERMOPLASTIC POLYMERS AND POLYCONDENSATES IN THE MASS WITH WATER-INSOLUBLE DISAZOMETHINE COMPOUNDS

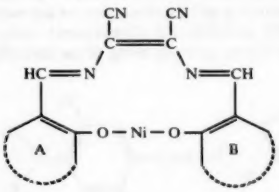
Theodor Papenfuhs, Frankfurt am Main, and Wolfgang Teige, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 21, 1979, Ser. No. 96,473

Int. Cl.³ D06P *3/52;* **C08J** *5/00*

U.S. Cl. 8—512 **14 Claims**

1. In a process for coloring a water-insoluble thermoplastic polymer or polycondensate in the mass which comprises incorporating, at least partially incorporating, a coloring compound into the mass of said material or into the reaction mass for preparing said material, the improvement which comprises incorporating, as the coloring compound, a disazomethine compound of the formula (1)



(1)

in which

A and B have the same meaning or are different from each other and each is an isocyclic or heterocyclic residue, and dissolving the coloring compound in that mass.

4,265,633
PROCESS FOR THE MANUFACTURE OF VAT DYES

Athanassios Tzikas, Pratteln, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

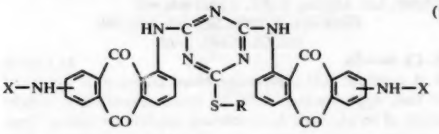
Filed Jan. 15, 1979, Ser. No. 3,327

Claims priority, application Switzerland, Jan. 18, 1978, 515/78

Int. Cl.[3] **C09B** *67/28;* **C07D** *251/00*

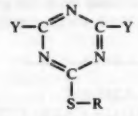
U.S. Cl. 8—650 **4 Claims**

1. A process for the manufacture of vat dyes of the formula wherein R is alkyl of 1 to 4 carbon atoms and X is an acyl radical, which comprises condensing a diaminoanthraquinone of the formula



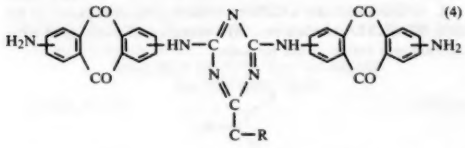
(1),

or mixtures of diaminoanthraquinones of the formula (2), with a 2,4-dihalogeno-6-alkylthio-s-triazine of the formula



(3)

wherein Y is halogen and R is as defined for formula (1), in the molar ratio 2:1, and condensing the resulting intermediate of the formula



(4)

with an acylating agent containing the acyl radical X which is as defined for formula (1), in the molar ratio 1:2.

4,265,634
CHROMATOGRAPHIC SEPARATION AND QUANTITATIVE ANALYSIS OF IONIC SPECIES

Christopher A. Pohl, Castro Valley, Calif., assignor to Dionex Corporation, Sunnyvale, Calif.

Filed Mar. 10, 1980, Ser. No. 128,836

Int. Cl.[3] **G01N** *31/04, 31/06, 31/08*

U.S. Cl. 23—230 R **30 Claims**

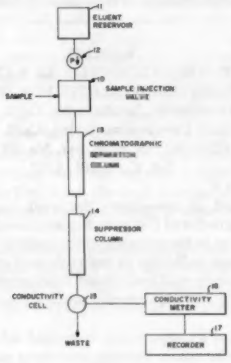
1. The method of chromatographic separation and quantitative analysis of at least a first and second ionic species of ionizable compounds in a polar mobile liquid phase, all of said ionic species being of a positive or negative charge, comprising the steps of:

(a) directing said mobile liquid phase, including an ion exchange site-forming compound, through a first column including a porous, hydrophobic chromatographic bed with essentially no permanently attached ion exchange sites, said ion exchange-site forming compound including a counter ion of opposite charge to said ionic species and also including a co-ion of the same charge as said ionic species, so that said counter ion forms reversible adsorptive bonds with said chromatographic bed to create ion exchange sites therein, and so that said first and second ionic species are differentially retarded by said ion exchange sites and are chromatographically resolved in the eluent from said first column, said eluent also including counter ions and co-ions,

(b) directing the eluent from said first column through a second column containing an ion exchange resin of a type which substantially precludes passage of said counter ions and co-ions in ionic form, and

(c) directing the eluent from said second column through a conductivity cell having associated readout means to quantitatively detect said first and second ionic species.

28. Apparatus for the chromatographic separation and quantitative analysis of species in a polar mobile liquid phase, including a common counter ion for said ionic species, all of said ionic species being of a positive or negative charge, said apparatus comprising:



(a) a first column containing a porous hydrophobic chromatographic bed with essentially no permanently attached ion exchange sites, said bed including hydrocarbon chains capable of forming reversible adsorptive bonds with organic moieties in said polar mobile liquid phase,

(b) means for supplying said polar mobile liquid phase to said first column,

(c) a second column containing an ion exchange resin bed of a type and capacity to substantially preclude passage of said counter ion in ionic form,

(d) first conduit means between first and second columns,

(e) conductivity measurement means and associated readout means, said measurement means including at least a first flowthrough conductivity cell, and

(f) second conduit means between said second column and said conductivity cell.

4,265,635
GASEOUS CONTAMINANT DOSIMETER WITH DIFFUSION DEVICE THEREFOR AND METHOD

Elbert V. Kring, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 922,546, Jul. 7, 1978, Pat. No. 4,208,371. This application Oct. 11, 1979, Ser. No. 83,645

Int. Cl.[3] **G01N** *31/22, 33/00;* **B01P** *53/22;* **B01D** *59/10*

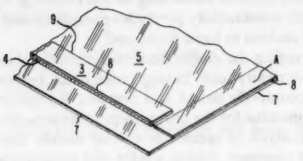
U.S. Cl. 23—232 R **2 Claims**

1. A method for the determination of integrated exposure to a gaseous contaminant in the atmosphere comprising:

sampling said gaseous contaminant in proportion to its atmospheric concentration over a given period of time by allowing diffusion of said contaminant through the channels of a plurality of hollow fibers wherein the fibers have an inside diameter of 15–1000 microns;

collecting the gaseous contaminant so diffused in a predetermined quantity of a collecting medium therefor wherein the collecting medium is an absorbing solution or an adsorbing material; and

causing said collecting medium to change color by contacting said medium with at least one color-forming reagent



such that the intensity of the color so produced is proportional to the amount of contaminant collected.

4,265,636

USE OF FORMALDEHYDE AS A CHEMICAL EMBRITTLING AGENT FOR WASTE

Theodore C. Frankiewicz, Westminster, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Filed Jul. 23, 1979, Ser. No. 59,873
Int. Cl.³ C10L *9/02*
U.S. Cl. 44—1 C **17 Claims**

1. A method of converting the solid organic fraction of waste into a powdered fuel which comprises heating said solid organic fraction in the presence of formaldehyde for a time and at a temperature sufficient to embrittle said solid organic fraction, comminuting said embrittled solid organic fraction to a powder having a predetermined particle size, and recovering said powder.

10. A method for separating municipal solid waste (MSW), comprising an inorganic fraction; including glass, ferrous mtals and aluminum; and a solid organic fraction, into valuable materials which comprises:

(a) shredding the MSW to provide a comminuted MSW;
(b) separating a ferrous metal fraction from said comminuted MSW and recovering a substantially ferrous metal-free fraction;
(c) subjecting said substantially ferrous metal-free fraction to air-classification to separate a solid organic fraction overhead, and leave an inorganic fraction, which includes glass and aluminum;
(d) comminuting said inorganic fraction to provide an aluminum-rich fraction having a particle size greater than 0.5 inches and a glass-rich fraction having a particle size of less than 0.5 inches;
(e) separating such aluminum-rich fraction from said glass-rich fraction;
(f) recovering glass from said glass-rich fraction;
(g) recovering aluminum from said aluminum-rich fraction;
(h) heating said separated solid organic fraction in the presence of formaldehyde for a time and at a temperature sufficient to embrittle said separated solid organic fraction;
(i) comminuting said embrittled solid organic fraction to a powder having a predetermined particle size; and
(j) recovering said powder.

4,265,637

PROCESS FOR PREPARING BLENDING FUEL

Ardis L. Anderson, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Jan. 16, 1980, Ser. No. 112,590
Int. Cl.³ C10L *9/10, 1/10*
U.S. Cl. 44—51 **2 Claims**

1. A process of preparing a blended fuel comprising:

(a) subjecting lignite containing its natural bed moisture to a drying step in which the moisture content of the lignite is reduced to from 10 to 20 percent by weight water;
(b) applying a hydrocarbon liquid having a flash point of greater than 65° C. to the dried lignite in an amount of from 2 to 20 liters of liquid per metric ton of dried lignite, wherein said hydrocarbon liquid is comprised of 50 to 75 volume percent decant oil from a fluidized bed catalytic cracking operation having a K factor of not more than 10.5 and 50 to 25 volume percent asphalt;
(c) storing the liquid treated lignite from step (b); and
(d) removing stored lignite and blending it with sufficient hydrocarbon fuel oil to provide a pumpable mixture.

4,265,638

SYNTHETIC FUEL FORMULATION AND PROCESS FOR PRODUCING THE SAME

Courtney L. Burke, Simi Valley, Calif., assignor to Albert M. Eisner, Los Angeles, Calif., a part interest

Filed Jan. 4, 1980, Ser. No. 109,550
Int. Cl.³ C10L *1/18*
U.S. Cl. 44—56 **11 Claims**

1. A synthetic fuel comprising, based on the total weight of said fuel, approximately fifty to about seventy-five weight percent of an aliphatic hydrocarbon alcohol containing from two to eleven carbon atoms, about five to about twelve weight percent water, approximately two to about twenty weight percent of an aromatic hydrocarbon solvent compatible with said alcohol, and about one to about seven weight percent each of a hydrocarbon glycol selected from the group consisting of ethylene and propylene glycol, acetone and methyl ethyl ketone.

4,265,639

COMBUSTION CATALYSTS

Myndert T. Scholtz, 2437 Edenhurst Dr., Mississauga, Ontario, Canada (L5A 2L2)

Filed Mar. 20, 1980, Ser. No. 132,119
Int. Cl.³ C10L *1/22*
U.S. Cl. 44—57 **15 Claims**

1. A stabilized fuel additive consisting essentially of (i) an iron (II)/EDTA chelate and (ii) a complex of picric acid with at least one amine of the formula

wherein R_1, R_2 and R_3 are hydrocarbyl groups having 1 to 12 carbon atoms, or hydrogen, provided that said amine has at least 3 carbon atoms.

4,265,640

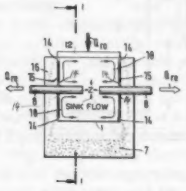
METHOD AND APPARATUS FOR SEPARATING PARTICLES FROM A FLOW BY CENTRIFUGAL FORCE

Ernst-August Bielefeldt, Hollenstedt, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 910,580, May 30, 1978, Pat. No. 4,205,965, which is a continuation-in-part of Ser. No. 717,148, Aug. 24, 1976, abandoned. This application Jul. 9, 1979, Ser. No. 56,052
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1975, 2538664; Jul. 21, 1978, 2832097
Int. Cl.³ B01D *45/12*
U.S. Cl. 55—1 **10 Claims**

1. In a method for separating heavier particles from a lighter gas flow by centrifugal force in an eddy chamber of given length having axially extending eddy chamber wall means and end walls, a central longitudinal axis and a flow entrance extending tangentially into the eddy chamber substantially entirely along said given length, and two suction pipes extending in axial alignment through said end walls substantially mirror-symmetrically into said eddy chamber close to a central zone in

said eddy chamber, the improvement comprising the steps of driving said lighter gas flow with the heavier particles suspended therein tangentially into said flow entrance whereby the lighter gas flow with the heavier particles suspended therein enters the eddy chamber substantially along the entire given chamber length and generates a primary substantially circular eddy flow which rotates around said longitudinal axis of the eddy chamber, spacing the inner ends of said suction pipes from each other to cause a sink flow between these inner suction pipe ends, axially withdrawing the flow at least partially through said suction pipes, maintaining in said eddy chamber a secondary flow which travels axially outwardly adjacent the inner surface of the axially extending eddy chamber wall means, radially inwardly along said end walls and axially inwardly upon changing the flow direction from radially inwardly to axially inwardly, locating particle discharge openings in said end walls at least at one location where said secondary flow changes its flow direction, and removing said particles through said discharge openings solely by said secondary flow without any suction applied to said particle discharge openings in said end walls.

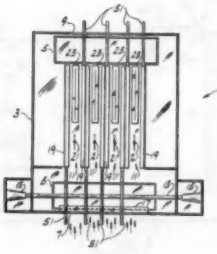


4,265,641

METHOD AND APPARATUS FOR PARTICLE CHARGING AND PARTICLE COLLECTING

Subbiah Natarajan, Fenton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 18, 1979, Ser. No. 40,260
Int. Cl.³ B03C *3/00*
U.S. Cl. 55—2 **68 Claims**



1. A method for charging submicron and larger particles in a gas stream, comprising:

providing a plurality of substantially evenly spaced-apart needles secured to a tube of insulative material disposed generally perpendicular to the direction of flow of the gas stream forming a corona discharge electrode,

arranging said needles in at least first and second groups, the needles of the first group being offset with respect to the needles of the second group longitudinally to the direction of flow of the gas stream,

providing plate electrodes spaced from said corona discharge electrode to define a passage for flow of said gas stream therethrough,

connecting said plate electrodes to one terminal of a high voltage, unidirectional-current source and said corona discharge electrode to the other terminal of said source,

generating an electrostatic field between said corona discharge electrode and said plate electrodes having a high voltage gradient of at least 6 KV/cm and extending along a path of the gas stream for a predetermined distance,

generating a first spatially discontinuous corona generally towards the upstream end of the electrostatic field to create a first band of ionization in said path and extending transversely thereacross, said band containing regions of relatively low ionization bordered by regions of relatively high ionization, said low ionization regions being substantially evenly spaced along said band transverse to the path of the gas stream,

generating a second spatially discontinuous corona downstream of the first corona in the electrostatic field to create a second band of ionization in said path and extending transversely thereacross, said second band containing regions of relatively low ionization bordered by regions of relatively high ionization, the regions of relatively high ionization of the second band being aligned along the path of the gas stream with the regions of relatively low ionization of the first band and the regions of relatively low ionization of the second band being aligned along the path of the gas stream with the regions of relatively high ionization of the first band, the total corona current density of the discontinuous coronas being at least approximately 4 ma/m^2, and

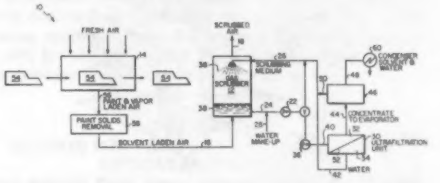
passing the gas stream containing particles to be charged along the path through said electrostatic field and said bands of ionization to highly charge substantially all the submicron and larger particles in the gas stream.

4,265,642

PROCESS OF REMOVAL OF SOLVENT VAPORS

Leon Mir, Newton, and Joseph Zahka, Dracut, both of Mass., assignors to Abcor, Inc., Wilmington, Mass.

Continuation of Ser. No. 16,419, Mar. 1, 1979, abandoned. This application Feb. 14, 1980, Ser. No. 121,638
Int. Cl.³ B01D *47/02*
U.S. Cl. 55—85 **9 Claims**



1. A process for the removal of a volatile organic solvent from a solvent-laden air stream, which process comprises:

(a) intimately contacting and scrubbing the solvent-laden air stream with an aqueous, multiple-phase scrubbing media to provide a solvent-lean air stream and a solvent-rich scrubbing media, the scrubbing media comprising a surfactant-containing oil-in-water emulsion which forms micelles in the water phase of the emulsion, and wherein the solvent is dissolved in the oil portion of the oil-in-water emulsion in the solvent-rich scrubbing media;

(b) discharging the solvent-lean air stream;

(c) concentrating the solvent-rich scrubbing media in a low-pressure ultrafiltration-membrane unit having a feed zone and a permeate zone separated by a membrane which permits the passage of water, but retards the passage of the micelle portion of the oil-in-water emulsion of the scrubbing media, to provide a concentrated, solvent-rich scrubbing media in the feed zone and permeate water which passes through the membrane into the permeate zone;

(d) heating the concentrated solvent-rich scrubbing media to

a temperature to volatilize the solvent, but insufficient to destabilize the oil-in-water emulsion from which the solvent is removed, to form a solvent vapor and a concentrated solvent-lean scrubbing media;

(e) condensing the solvent vapor; and

(f) continuously recycling the concentrated solvent-lean surfactant oil-in-water scrubbing media and the permeate water from the permeate zone for use in the contacting and scrubbing of the solvent-laden air stream, to reconstitute a scrubbing media for use in the contacting and scrubbing steps,

whereby the volatile organic solvent is condensed, a solvent-lean air stream is discharged and the multiple-phase scrubbing media is continuously recycled and reused in removing the solvent from the solvent-laden air stream.

4,265,643

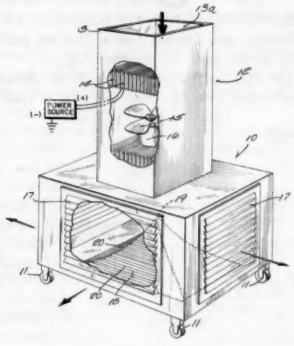
AIR PURIFIER

Edward S. Dawson, 2927 Hillsboro Ave, North, Minneapolis, Minn. 55427

Continuation-in-part of Ser. No. 840,915, Oct. 11, 1977, abandoned. This application Mar. 9, 1979, Ser. No. 19,070

Int. Cl.[3] **B03C** *3/12, 3/36, 3/45*

U.S. Cl. 55—130 **1 Claim**



1. An air purifier consisting of a body, a chimney extending above the body and connected thereto, a passageway between the body and the chimney, an air-intake opening at the top of the chimney, an air-moving fan disposed in the chimney for drawing air and particles entrained therein through said chimney and moving the air and particles through the chimney, passageway and body, an ionizing member disposed in said chimney, electrical means operatively connected to the ionizing member for creating a positive charge on the ionizing member whereby to create a positive charge on any particles moved through said ionizing member by said air-moving fan, at least one collector disposed within the body at a distance from the ionizing member, the collector being electrically grounded, at least one discharge opening in the body, the discharge opening having a total area substantially greater than the area of the air-intake opening, the collector being a lightweight, corrugated, metallic, multi-sided cone with sloping sides to direct the air from the chimney and passageway to the discharge opening.

4,265,644

CONDENSATION OF METAL VAPOR

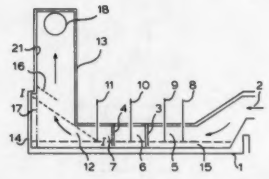
Michael W. Gammon, Oen, England, assignor to Metallurgical Processes Limited and I.S.C. Smelting, both of, The Bahamas

Filed Nov. 1, 1979, Ser. No. 90,125

Claims priority, application United Kingdom, Nov. 24, 1978, 45975/78

Int. Cl.[3] **B01D** *47/06;* **C22B** *19/04*

U.S. Cl. 55—257 NP **5 Claims**



1. A lead-splash condenser for condensing metal vapor from a hot gas stream, comprising a plurality of intercommunicating condensation chambers; spray generating means provided in each condensation chamber; an inlet for passage of a hot gas containing metal vapor to the first condensation chamber, said inlet communicating with said first condensation chamber; an outlet for passage of the gas from the last condensation chamber, said outlet communicating with said last condensation chamber; and a stack communicating with said outlet, wherein the stack is provided with gas deflector means for deflecting the gas stream from the side wall of the stack facing said outlet so as to obtain a more uniform gas distribution in the stack.

4,265,645

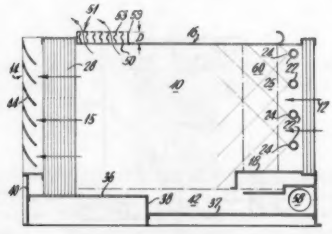
INJECTOR TYPE COOLING TOWER HAVING AIR DISCHARGE SLOTS

Richard P. Merrill, Columbia, Md., assignor to Baltimore Aircoil Co., Inc., Jessup, Md.

Filed Jan. 21, 1980, Ser. No. 114,000

Int. Cl.[3] **B01D** *47/06*

U.S. Cl. 55—257 PV **5 Claims**



1. In combination with an injector type liquid cooling system which comprises an air conduit open at both ends to the atmosphere, a plurality of liquid spray nozzles positioned near one end of the conduit and distributed over its cross-section, said nozzles being oriented to direct liquid sprays toward the other end of said conduit, said sprays intersecting to form a pumping or pressure region, liquid-air separator means positioned in said conduit near its said other end for intercepting the liquid sprayed by said nozzles and for causing said liquid to flow downwardly along said liquid-air separator means, a liquid collection sump positioned to collect liquid which flows down from the liquid-air separator means; an air slot with adjacent air-liquid separator means distributed over said slot downstream of said pressure or pumping region, said slot being arranged to allow air to escape from said conduit.

4,265,646

FOREIGN PARTICLE SEPARATOR SYSTEM

Barry Weinstein, Georgetown, and William Steyer, Ipswich, both of Mass., assignors to General Electric Company, Lynn, Mass.

Filed Oct. 1, 1979, Ser. No. 80,854
Int. Cl.[3] B01D *39/00*
U.S. Cl. 55—306 6 Claims

1. In a gas turbine engine having an inlet, a compressor, a combustor, and a turbine operatively connected to form a primary flow path means in which a gaseous flowing stream of fluid is compressed, combusted, and expanded, an inlet particle separator system comprising:

particle separating means disposed proximate said inlet for removing foreign particles from the primary flow path;

conduit means connected to said particle separating means for receiving (said) particles removed from the primary flow path by said particle separating means;

ejector means operatively connected to said conduit means to effect a flow of a second gaseous stream of fluid in said conduit for drawing said particles through said conduit means away from said particle separating means; and

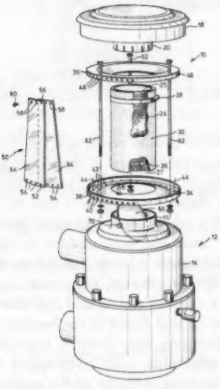
mixing means disposed proximate said ejector means (and) downstream of said turbine and (in fluid communication with said conduit means for receiving said second stream of fluid and for mixing said second stream of fluid with said stream of fluid flowing in said primary flow path) comprising means for axially directing said stream of fluid flowing in said primary flow path means aft of said turbine, and a plurality of axially and radially extending chutes disposed circumferentially about said primary flow path means and in fluid communication with said conduit means for receiving said second gaseous stream of fluid including contained particles therefrom and discharging said second stream of fluid into said stream of fluid flowing in the primary flow path in a plurality of discrete rivulets.

4,265,647

AIR PREFILTER

James P. Donachiue, 28 Helene St., Apt. 804, Mississauga, Ontario, Canada (L5G 3B7)

Filed May 14, 1979, Ser. No. 38,543
Claims priority, application Canada, Apr. 6, 1979, 325108
Int. Cl.[3] B01D *50/00*; B60J *13/02*
U.S. Cl. 55—315 28 Claims



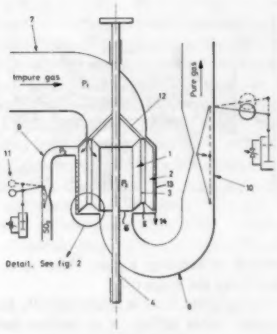
1. A prefilter for use with an engine air filter of the type having a filter housing containing a filter element, and an intake housing having an air inlet opening, the prefilter comprising: a perforated, generally rigid sleeve having opposite air inlet and air outlet end portions, the sleeve inlet and outlet end portions being adapted to be connected respectively to said intake housing and said filter housing, so that air may pass from said air inlet opening axially through the sleeve to said filter housing, and air may also pass transversely through the sleeve to said filter housing; a foraminous filter medium enveloping the sleeve, the filter medium being in the configuration of a hollow frustum having a thicker, larger diameter base located adjacent to the sleeve outlet end portion and of such porosity that engine intake air primarily passes therethrough and thus transversely through the sleeve to said filter housing; and means for releasably coupling the sleeve end portions of the filter housing and to the intake housing.

4,265,648

CENTRIFUGE FOR SEPARATING GAS MIXTURES

Erling Wedege, Langbolgen 21, Oslo 11, Norway

Filed Nov. 8, 1979, Ser. No. 92,557
Claims priority, application Norway, Nov. 15, 1978, 783842
Int. Cl.[3] B01D *45/14*
U.S. Cl. 55—409 3 Claims



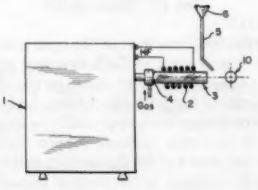
1. A centrifuge for separating gas mixtures, comprising a rotor means rotatable about an axis and including frustoconical plates spaced from one another in the direction of the rotor axis, said frustoconical plates comprising two separate radially spaced, concentric sets of frustoconical plates, the plates of one set being oppositely inclined from the plates of the other set, the inlet for the gas mixture being arranged in the annular space between the two concentric sets.

4,265,649

METHOD FOR PREPARING A PREFORM FOR OPTICAL WAVEGUIDES

Claude Achener, Paris, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jan. 9, 1980, Ser. No. 110,774
Claims priority, application France, Jan. 10, 1979, 79 00525
Int. Cl.[3] C03C *25/02*
U.S. Cl. 65—18 6 Claims



1. A method for producing a preform for an optical waveguide having a core surrounded by a sheath with a lower refractive index which varies radially, said method comprising

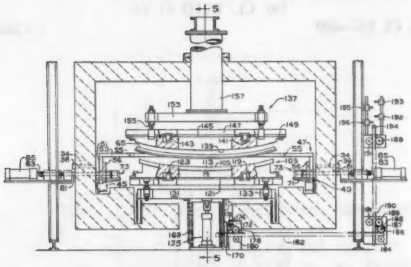
depositing by means of a plasma torch a plurality of layers of different composition on a bar forming a core region, wherein glass powder is fed to the torch by gravity transversely to the jet of said torch, said bar being drawn after the deposition of each layer so that its diameter is brought to a value equal or at least close to the initial diameter, the chemical composition of the glass powder being modified after each layer is deposited.

4,265,650

METHOD OF BENDING GLASS SHEETS IN UNISON TO COMPLICATED SHAPES

Thomas J. Reese, Sarver, and Dean L. Thomas, Glenshaw, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 2, 1979, Ser. No. 90,819
Int. Cl.[3] C03B *23/025, 23/03*
U.S. Cl. 65—104 **9 Claims**



1. A method of bending a glass sheet to a predetermined shape, comprising the steps of:

positioning the glass sheet in a substantially horizontal orientation over upper surface of an outline mold;

heating the supported sheet to its deformation temperature to gravity sag the sheet to develop a shape generally correlated to the shape of the outline mold;

transferring the hot sheet onto a solid mold having a continuous shaping surface conforming to to the predetermined shape for a time sufficient for the sheet to conform to the shaping surface of the solid mold;

transferring the hot shaped sheet to the upper surface of the outline mold while the sheet is at its deformation temperature; and

cooling the sheet.

4,265,651

ROTARY FIRE-FINISHING MACHINE FOR GLASS ARTICLES

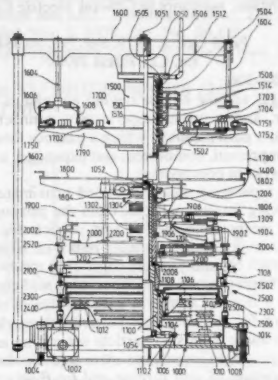
Jean Morel, Reims, France, assignor to Verreries Mecaniques Champenoises, Reims, France

Continuation-in-part of Ser. No. 936,196, Aug. 24, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 87,808
Claims priority, application France, Aug. 26, 1977, 77 26063
Int. Cl.[3] C03B *29/04*
U.S. Cl. 65—252 **12 Claims**

1. In a fire-finishing machine of the type comprising:

a frame, a central vertical shaft mounted on the frame, a central column mounted to rotate on the shaft, a vertical rotary assembly fast with the column, said assembly comprising article supporting cups and burners disposed in the vicinity of said cups, separate support means being provided for the cups and for the burners, and drive means for ensuring the rotation of the vertical assembly so that the cups describe a circular path,

valves are additionally provided to supply said burners, said valves being fast with the rotary assembly and supplied by a rotary distributor mounted on the shaft, and fixed opening and closure control means, fast with the frame, and actuatable separately, are provided to allow selective



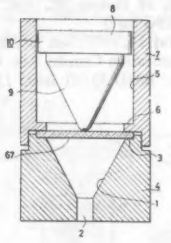
control of the valves when they cooperate with said control means upon rotation of the assembly.

4,265,652

APPARATUS FOR PRODUCING BRAUN TUBES

Hajime Goto; Ikuzo Amemiya, and Masanobu Nakayama, all of Yokohama, Japan, assignors to Kabushikikaisha Kanagawa Seisakusho, Tokyo, Japan

Filed Jan. 10, 1980, Ser. No. 111,026
Claims priority, application Japan, Jan. 26, 1979, 54/7211
Int. Cl.[3] C03B *23/02, 23/03*
U.S. Cl. 65—273 **1 Claim**



1. An apparatus for producing Braun tubes characterized in that a holder is removably fitted at the lower end to the upper end of a female mold provided with a fitting recess, a male mold is vertically slidably arranged in said holder, each overlapped body with a glass plate arranged between the above mentioned female mold and male mold is formed, a cylinder is vertically provided above a heating molding chamber section of a heating molding apparatus, the lower end of a pressing shaft connected to a piston rod of said cylinder is present so as to be free to move up and down in the heating molding chamber section, a conveying base plate is provided through the heating molding apparatus, each overlapped body of the female mold and male mold with the above mentioned glass plate arranged between them is mounted on said conveying base plate and is successively intermittently moved and, whenever the intermittently moved overlapped body stops just below the cylinder of the heating chamber section, the cylinder is operated to depress and undepress the male mold with the lower end of the pressing shaft.

4,265,653
MANGANESE MICRONUTRIENT SOLUTIONS

Hazen L. Hoyt, 4th, Niantic, and Daniel R. Uhr, Jr., Stonington, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Jul. 5, 1979, Ser. No. 54,542

Int. Cl.³ C05C *3/00*

U.S. Cl. 71—11 **10 Claims**

1. An aqueous plant nutrient solution consisting essentially of (a) a soluble ferrous compound in an amount sufficient to provide between 0.1 and 2.0 wt. % ferrous ion; (b) a soluble manganous compound in an amount sufficient to provide about 5 wt. % of manganous ion; (c) between 1 and 1.5 moles of citric acid anion per mole of manganous ion; and (d) ammonia in an amount sufficient to maintain said solution at a pH between 7.5 and 12.

4,265,654
HERBICIDAL COMPOSITIONS

Tetsuo Takematsu; Makoto Konnai, both of Utsunomiya; Kunitaka Tachibana, Yokohama; Takashi Tsuruoka, Kawasaki; Shigeharu Inouye, and Tetsuro Watanabe, both of Yokohama, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

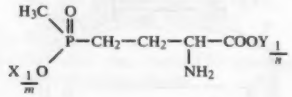
Filed Dec. 20, 1978, Ser. No. 971,636

Claims priority, application Japan, Dec. 28, 1977, 52-157421; Dec. 28, 1977, 52-157422; Dec. 29, 1977, 52-158932; Mar. 30, 1978, 53-36059

Int. Cl.³ A01N *57/12*

U.S. Cl. 71—86 **11 Claims**

1. A method for controlling perennial weeds which comprises applying heribicidal compositions containing a herbicidally effective amount of the L-isomer of a compound of the formula



wherein X and Y are the same or different and each represents a hydrogen atom, a mono- or di-valent metal atom, a mono-, di- or tri-lower-alkylammonium, a mono-, di- or tri-ethanolammonium, or a mono-, di or tri-lower-alkenylammonium, and m and n represent valencies of X and Y, respectively or an acid-addition salt thereof to land selected from the group consisting of crop land, non-crop land, orchard, forest land and meadow.

4,265,655
2-OXO- AND 2-THIOXO-1,3-DITHIOL COMPOUNDS AS ACTIVE SUBSTANCES FOR REGULATING PLANT METABOLISM AND THEIR USE

Saleem Farooq, Ettingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

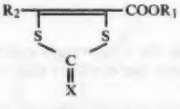
Filed May 31, 1979, Ser. No. 44,297

Claims priority, application Switzerland, Jun. 7, 1978, 6224/78

Int. Cl.³ A01N *43/02, 43/00*

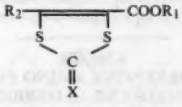
U.S. Cl. 71—90 **5 Claims**

1. A method of regulating plant metabolism which comprises applying to said plant an effective amount of a compound of the formula



wherein R_1 represents C_1–C_8alkyl which can be interrupted by one or more oxygen atoms or substituted by halogen, phenyl or phenoxy, whilst the phenyl nucleus can be substituted by halogen, cyano, nitro, trifluoromethyl, C_1–C_4alkyl, or phenoxy; C_3–C_8alkenyl which is unsubstituted or substituted by halogen; C_3–C_8alkynyl; C_3–C_6cycloalkyl; phenyl which is unsubstituted or substituted by halogen, cyano, nitro, trifluoromethyl, C_1–C_4alkyl, C_1–C_4alkoxy or phenoxy, C_1–C_4alkoxycarbonyl, acetyloxy or dioxy-C_1–C_2alkylene; R_2 represents hydrogen, methyl, C_1–C_8alkoxycarbonyl, or phenyl which is unsubstituted or substituted by halogen, cyano, nitro, trifluoromethyl, C_1–C_4alkyl, C_1–C_4alkoxy or phenoxy, X represents oxygen or sulfur.

2. A method of promoting the abscission of fruit which is ripe for harvesting which comprises applying to said fruit an effective amount of a compound of the formula



wherein R_1 represents C_1–C_8alkyl which can be interrupted by one or more oxygen atoms or substituted by halogen, phenyl or phenoxy, whilst the phenyl nucleus can be substituted by halogen, cyano, nitro, trifluoromethyl, C_1–C_4alkyl, or phenoxy; C_3–C_8alkenyl which is unsubstituted or substituted by halogen; C_3–C_8alkynyl; C_3–C_6cycloalkyl; phenyl which is unsubstituted or substituted by halogen, cyano, nitro, trifluoromethyl, C_1–C_4alkyl, C_1–C_4alkoxy or phenoxy, C_1–C_4alkoxycarbonyl, acetyloxy or dioxy-C_1–C_2alkylene; R_2 represents hydrogen, methyl, C_1–C_8 alkoxycarbonyl, or phenyl which is unsubstituted or substituted by halogen, cyano, nitro, trifluoromethyl, C_1–C_4alkyl, C_1–C_4alkoxy or phenoxy, X represents oxygen or sulfur.

4,265,656
COMPOSITIONS AND METHODS FOR INHIBITING THE GROWTH OF CEREALS

Klaus Lürssen, Berg.-Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 11, 1979, Ser. No. 74,593

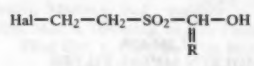
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842220

Int. Cl.³ C07D *293/08*

U.S. Cl. 71—103 **15 Claims**

1. Composition for inhibiting the growth of cereals comprising, as active ingredients,

(a) one haloethylsulfone of the formula



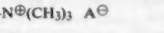
(I)

wherein

Hal is halogen and

R is hydrogen or alkyl of 1 to 6 carbon atoms and

(b) one (2-chloroethyl)-trimethylammonium compound of the Formula



(II)

wherein

$A^{\ominus}$ is a halide, tetrafluoroborate or alkylsulphate, and

the proportion of ingredient (a) to ingredient (b) is from 1:0.04 to 1:2.

4,265,657

HERBICIDAL COMPOSITIONS CONTAINING α-HALO ACETANILIDES AND SUBSTITUTED BICYCLO(3.3.1)NON-2-ENE COMPOUNDS AS SAFENING AGENTS

James A. Kloek, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 1, 1979, Ser. No. 80,750
Int. Cl.[3] A01N *25/32*
U.S. Cl. 71—106 6 Claims

1. A composition comprising a herbicidally effective amount of 2-chloro-2',6'-diethyl-N-(methoxymethyl) acetanilide and an effective safening amount of a compound selected from the group consisting of 2,4-dichlorophenyl ester of 9-oxo-bicyclo[3.3.1]non-3-ene-1-carboxylic acid, 3-(trifluoromethyl)phenyl ester of 9-oxo-bicyclo[3.3.1]non-3-ene-1-carboxylic acid and 2,4-diphenyl-bicyclo[3.3.1]non-2-en-9-semicarbazone.

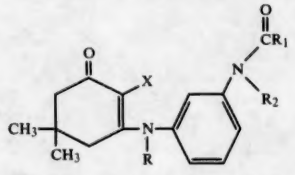
4,265,658

NOVEL CYCLOHEXENONE AMINO PHENYL AMIDES AND THEIR USE AS HERBICIDES

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Richmond, Calif.

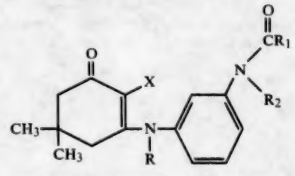
Filed Sep. 20, 1978, Ser. No. 944,047
Int. Cl.[3] A01N *37/18, 47/30;* C07C *127/15, 103/27*
U.S. Cl. 71—118 15 Claims

1. A compound having the formula



in which X is hydrogen, chloro or bromo; R is hydrogen or lower alkanoyl; R_1 is lower alkyl, cyclopropyl or NR_3R_4; R_2 is hydrogen or lower alkanoyl and R_3 and R_4 are independently hydrogen or lower alkyl.

12. A method of controlling undesirable vegetation comprising applying to the vegetation a herbicidally effective amount of a compound having the formula



in which X is hydrogen, chloro or bromo; R is hydrogen or lower alkanoyl; R_1 is lower alkyl, cyclopropyl or NR_3R_4; R_2 is hydrogen or lower alkanoyl and R_3 and R_4 are independently hydrogen or lower alkyl.

4,265,659

MOLTEN METAL FILTER

James C. Blome, Florissant, Mo., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Oct. 9, 1979, Ser. No. 83,193
Int. Cl.[3] B01D *39/16;* C04B *21/00*
U.S. Cl. 75—93 R 4 Claims

1. A ceramic foam molten metal filter for use in filtering molten metal having an open cell structure characterized by a plurality of interconnected voids surrounded by a web of said ceramic, said ceramic having a plurality of ceramic fibers dispersed therein and protruding out of the web of said ceramic and into said plurality of interconnected voids thereby providing a fuzzy surface in the pores of said filter for aiding in filtering said molten metal.

4,265,660

HIGH-STRENGTH FREE-CUTTING STEEL ABLE TO SUPPORT DYNAMIC STRESSES

Henrik Giflo, III Ujitok u.5, 3532 Miskolc, Hungary

Filed Jul. 3, 1979, Ser. No. 54,527
Int. Cl.[3] C22C *33/00*
U.S. Cl. 75—123 B 3 Claims

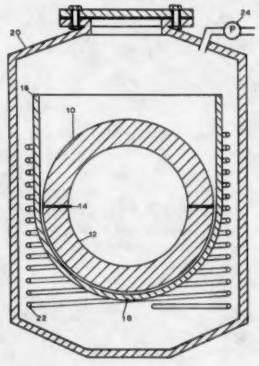
1. A free-cutting steel able to support dynamic stresses and exhibiting a high strength, even without hardening, and an excellent aptitude for machining by material removal, which is intended for making machine elements subjected to great stresses, consisting essentially of, besides iron, 0.1 to 0.7% (by weight) of C, 1.2 to 3% (by weight) of Mn, 0.1 to 1% (by weight) of Si, at most 0.1% (by weight) of P, 0.05 to 0.15% (by weight) of S, at least 0.1% (by weight) of Pb, 0.001 to 0.03% (by weight) of Ca, 0.001 to 0.005% (by weight) of B, 0.007 to 0.035% (by weight) of N, 0.03 to 0.2% (by weight) of Nb or V or their mixture, 0.01 to 0.25% (by weight) of Zr or Ce or their mixture, at most 0.2% (by weight) of Be or Bi or their mixture, and at most 1% (by weight) of Mo or Ni or their mixture.

4,265,661

DIRECT SYNTHESIS OF INTERMETALLIC COMPOUNDS

Rowland M. Ware, Cottenham, England, assignor to Cambridge Analyzing Instruments Ltd., Hertfordshire, England

Filed Sep. 21, 1979, Ser. No. 77,550
Claims priority, application United Kingdom, Oct. 25, 1978, 41826/78
Int. Cl.[3] C01G *15/00;* C01B *27/00*
U.S. Cl. 75—135 13 Claims



1. In a process of forming a compound of two elements at least one of which has a high vapor pressure at the required reaction temperature comprising:

placing the elements in a suitable vessel together with a solid encapsulant material which will melt at a temperature below the temperature at which reaction occurs between the elements;

increasing the temperature and pressure so that the solid encapsulant melts to form a liquid seal over the elements; and,

further increasing the temperature and pressure to cause a reaction between the elements thus forming the desired compound,

the improvement which comprises providing a hollow container of the solid encapsulant material, sealing the elements in the container, and placing the sealed contained into the vesel.

4,265,662

HARD ALLOY CONTAINING MOLYBDENUM AND TUNGSTEN

Masaya Miyake; Minol Nakano; Takaharu Yamamoto, and Akio Hara, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Dec. 19, 1978, Ser. No. 971,835

Claims priority, application Japan, Dec. 29, 1977, 52-159298; Jan. 18, 1978, 53-4703; Feb. 8, 1978, 53-13894; Feb. 24, 1978, 53-21371; Feb. 28, 1978, 53-23237; Mar. 10, 1978, 53-28014

Int. Cl.[3] B22F *3/00*

U.S. Cl. 75—238 16 Claims

1. A hard alloy comprising a hard phase consisting of at least one compound having a crystal structure of simple hexagonal MC type (M: metal; C: carbon) selected from the group consisting of mixed carbides, carbonitrides and carboxynitrides of molybdenum and tungsten as a predominant component, and a binder phase consisting of iron, cobalt, nickel and chromium, in which a hard phase consisting of a compound of M_2C type, wherein M and C are as defined above, having a crystal structure of the hexagonal type is uniformly dispersed in a proportion of at most 30% by volume based on all the hard phases, said compound of M_2C type being in a granular or globular form with a size of at most 10 microns, and wherein the carbon content in the hard phases of the alloy is in an atomic proportion of 0.98 to 0.8 with respect to the theoretical carbon content of the MC type compound.

4,265,663

WAX FORMULATIONS

George A. Gilicinski, Tulsa, Okla., and Rodney G. Lawrence, Howell, Mich., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Sep. 27, 1979, Ser. No. 79,271

Int. Cl.[3] C09G *1/04, 1/12*

U.S. Cl. 106—10 6 Claims

1. A wax formulation characterized by containing a liquid poly(alpha-olefin) and a fluid silicone.

4,265,664

SPIROCYCLIC BORON COMPOUNDS, A PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS A FLAME-RETARDANT ADDITIVE

Gerald Saischek, Wels; Karlheinz Wegleitner, Linz; Ferdinand Heu, Linz, and Roman Wohlmuth, Linz, all of Austria, assignors to Chemie Linz Aktiengesellschaft, Linz, Austria

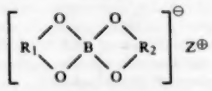
Filed May 11, 1979, Ser. No. 38,300

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820909

Int. Cl.[3] C07F *5/04*

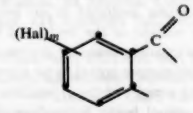
U.S. Cl. 106—18.13 16 Claims

1. A spirocyclic boron compound of the formula



(I)

wherein R_1 and R_2, which may be the same or different, each are dihalogeno alkylene, having 2 to 6 carbon atoms, a halogen-substituted bis-methyleno-bicycloheptene-radical, tetrahalogeno-o,o'-phenylene, tetrachloro-o,o'-biphenylene, tetrabromo-o,o'-biphenylene or a group of the formula

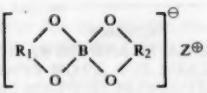


(II)

in which Hal is chlorine or bromine and m is the integer 3 or 4, and Z^+ is alkali metal ion, an equivalent of an alkaline earth metal, a guanidinium or hydrazinium ion or an ion of the formula

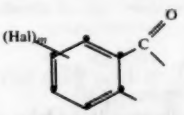
wherein R_3, R_4, R_5 and R_6, which may be the same or different, each are hydrogen, alkyl with 1 to 8 carbon atoms, cycloalkyl with 5 or 6 carbon atoms or phenyl, whereby in the case where one of the radicals R_3, R_4, R_5 or R_6 is phenyl, the other ones have a meaning other than phenyl.

16. A flame retarding agent which comprises a spirocyclic boron compound of the formula



(I)

wherein R_1 and R_2, which may be the same or different, each are dihalogeno alkylene, having 2 to 6 carbon atoms, a halogen-substituted bis-methyleno-bicycloheptene-radical, tetrahalogeno-o,o'-phenylene, tetrachloro-o,o'-biphenylene, tetrabromo-o,o'-biphenylene or a group of the formula



(II)

in which Hal is chlorine or bromine and m is the integer 3 or 4, and Z^+ is alkali metal ion, an equivalent of an alkaline earth metal, a guanidinium or hydrazinium ion or an ion of the formula

wherein R_3, R_4, R_5 and R_6, which may be the same or different, each are hydrogen, alkyl with 1 to 8 carbon atoms, cycloalkyl with 5 or 6 carbon atoms or phenyl, whereby in the case where one of the radicals R_3, R_4, R_5 or R_6 is phenyl, the other ones have a meaning other than phenyl and Sb_2O_3 as synergistic agent.

4,265,665

FOUNDRY MOLDS CONTAINING GLASSY METAL ALLOY FILAMENTS

John R. Bedell, Madison, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Oct. 1, 1979, Ser. No. 80,372

Int. Cl.[3] B28B *7/28*

U.S. Cl. 106—38.9 12 Claims

1. In a foundry mold containing an admixture of sand and a binder, the improvement comprising about 0.2 to 9.9 percent by weight of glassy metal alloy reinforcing filaments dispersed in said admixture, said filaments having an aspect ratio in the range of 5 to 300 and having a composition selected from the group consisting of:

(a) about 35 to 45 atom percent iron, about 35 to 45 atom percent nickel, about 12 to 16 atom percent phosphorus, and about 4 to 8 atom percent boron;

(b) about 35 to 45 atom percent iron, about 35 to 45 atom percent nickel, and about 15 to 25 atom percent boron;

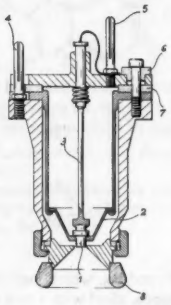
(c) about 35 to 45 atom percent iron, about 35 to 45 atom percent nickel, about 15 to 25 atom percent boron and about 3 to 5 atom percent molybdenum;
(d) about 70 to 80 atom percent iron, about 10 to 20 atom percent phosphorus, 0 to about 15 atom percent carbon, about 2 to 5 atom percent aluminum, and 0 to about 2 atom percent silicon;
(e) about 75 to 85 atom percent iron, about 8 to 15 atom percent boron, 0 to about 5 atom percent carbon, and 0 to about 12 atom percent silicon;
(f) about 75 to 85 atom percent iron, about 8 to 12 atom percent boron, and about 5 to 15 atom percent silicon;
(g) about 75 to 85 atom percent iron, and about 15 to 25 atom percent boron; and
(h) about 75 to 85 atom percent iron, and about 15 to 25 atom percent phosphorus.

4,265,666

BORON CARBIDE LA, SR AND/OR BA HEXABORIDE CERAMIC MATERIAL FOR A LOW TEMPERATURE DIRECT HEATING ELECTRIC GUN CATHODE

Michel Contre, Verriere-le-Buisson; Philippe Martin, Orsay, and Monique Quetier, Paris, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 17, 1979, Ser. No. 67,365
Claims priority, application France, Aug. 18, 1978, 78 24109
Int. Cl.[3] C04B *35/52, 35/58, 35/50*
U.S. Cl. 106—43 2 Claims



1. A ceramic material for a low temperature direct heating electron gun cathode consisting essentially of boron carbide and at least one hexaboride selected from the group consisting of the hexaborides of of lanthanum, strontium and barium, and mixtures thereof, said ceramic material being produced by co-fritting the aforesaid components at an elevated temperature for a time and in the proportions sufficient to result in a product having a proportion of hexaboride of from about 10% to 70% by volume thereof.

4,265,667

STEP-TYPE LIGHT-TRANSMITTING BODY HAVING EXCELLENT WATER RESISTANCE

Yoshirou Ikeda, and Yoshikazu Kaite, both of Nishinomiya, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Apr. 25, 1980, Ser. No. 145,455
Int. Cl.[3] C03C *3/08, 3/10, 13/00;* G02B *5/14*
U.S. Cl. 106—47 Q 1 Claim

1. A step-type light-transmitting body having excellent water resistance, said light-transmitting body comprising a core material of a glass having a refractive index of 1.60 to 1.66 and the following composition in % by weight:

(1) SiO_2	15–40,
(2) ZrO_2	8–15,
(3) B_2O_3	7–12,
(4) BaO	30–45,
(5) Na_2O	5–12,
(6) GeO_2	0–30,
TiO_2	0–3,
Al_2O_3	0–5,
La_2O_3	0–5,
MgO	0–5,
CaO	0–7,
ZnO	0–7,
SrO	0–5,
Li_2O	0–8,
K_2O	0–10,
Rb_2O	0–5, and
Cs_2O	0–8;
provided that	
SiO_2+GeO_2	15–50,
ZrO_2+BaO	38–50,
$Na_2O+Li_2O+K_2O+Rb_2O+Cs_2O$	5–15, and
$MgO+CaO+ZnO+SrO+TiO_2+Al_2O_3+La_2O_3$	0–12.

4,265,668

HIGH DIELECTRIC CONSTANT TYPE CERAMIC COMPOSITION

Shinobu Fujiwara, Nikahomachi; Kiyoshi Furukawa; Nobuaki Kikuchi, both of Akita; Osamu Iizawa, Honjo, and Hitoshi Tanaka, Nikahomachi, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 89,245
Claims priority, application Japan, Oct. 30, 1978, 53/133518; Mar. 2, 1979, 54/24243; Mar. 7, 1979, 54/24246; Mar. 7, 1979, 54/26448
Int. Cl.[3] C04B *35/46, 35/00;* H01B *3/12*
U.S. Cl. 106—73.3 21 Claims

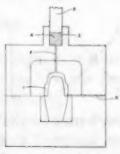
1. A high dielectric constant type ceramic composition, characterized in that said composition consists essentially of a basic ceramic composition of from 68.67 to 69.19% of PbO, from 3.67 to 4.09% of MgO, 24.17 to 26.99% of Nb_2O_5 and from 0.25 to 2.97% of TiO_2, all percentages being by weight.

4,265,669

SHRINK-FREE CERAMIC AND METHOD AND RAW BATCH FOR THE MANUFACTURE THEREOF

Lynn B. Starling, Rolla, Mo.; James E. Stephan, Arvada, and Robert D. Stroud, Boulder, both of Colo., assignors to Coors Porcelain Company, Golden, Colo.; Ralph B. Sozio, Boston and Edwin J. Riley, Milton, both of, Mass., part interest to each

Filed Dec. 14, 1979, Ser. No. 103,771
Int. Cl.[3] C04B *35/44, 35/04, 35/10*
U.S. Cl. 106—73.4 25 Claims



1. A fired substantially nonporous and shrink-free ceramic body containing crystalline material in an amount of from about 70% to 95% by weight of the body and the remainder interstitial glass, said crystalline material containing aluminum oxide and magnesium aluminate spinel in an aggregate amount of at least about 70% by weight of the crystalline material, said magnesium aluminate spinel being formed in situ during the firing of said ceramic body thereby to cause expansion which compensates for shrinkage which would otherwise occur.

4,265,670

METHOD AND APPARATUS FOR THE THERMAL TREATMENT OF FINE-GRAINED MATERIAL WITH HOT GASES

Kunibert Brachthäuser, Bergisch-Gladbach, and Horst Herchenbach, Troisdorf, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Division of Ser. No. 932,902, Aug. 11, 1978. This application Feb. 5, 1980, Ser. No. 118,779

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1977, 2736607

Int. Cl.³ C04B *7/44*

U.S. Cl. 106—100 **11 Claims**

1. A method for the thermal treatment of particulate raw material having relatively fine and relatively coarse particles in the calcination of cement which comprises:

feeding said particulate raw material to cause suspension of said relatively fine particles in a first combustion zone,

introducing a relatively rapidly oxidizing fuel into said first combustion zone to thereby oxidize the same and transfer its heat to such finely divided particles,

feeding the at least partially deacidified finely divided particles from said first combustion zone into a second combustion zone,

contacting the at least partially deacidified relatively fine particles and the relatively coarse particles in said second combustion zone with relatively slowly oxidizing fuel, and

subsequently sintering the material thus treated in said second combustion zone in a sintering zone.

4,265,671

METHOD OF UTILIZING FLY ASH FROM POWER WORKS AND REFUSE DISPOSAL PLANTS IN THE PRODUCTION OF CEMENT CLINKERS, AND A PLANT FOR CARRYING OUT SAID METHOD

Karl K. K. Kroyer, Engtoften 3, DK-8260 Viby J., Denmark

Continuation of Ser. No. 865,153, Dec. 28, 1977, abandoned. This application Mar. 23, 1979, Ser. No. 23,496

Claims priority, application United Kingdom, Jan. 4, 1977, 47/77

Int. Cl.³ C04B *7/36*

U.S. Cl. 106—103 **3 Claims**

1. In a method for producing cement clinkers in a rotary kiln fed from both ends with calcareous, siliceous, ferriferous and argillaceous raw materials with a composition adapted as necessary for clinker formation, said kiln being stoked with fuel injected from the lower end together with a gas supporting the combustion, and where the clinkers produced after nodulization and subsequent sintering are removed from the lower end of the kiln and cooled, while the added gases and those produced during the process are removed from the upper end of the kiln and are freed of entrained dust in a filter, the improvement which comprises introducing exclusively to a firing zone in the lower end of the rotary kiln co-currently with the injected combustion-supporting gas fly ash, said fly ash and calcareous minerals added therewith being in an amount such as to constitute 30 to 50% by weight of the total raw materials, said fly ash having a mineral composition which together with the total of the calcareous minerals corresponds with the desired composition of the clinkers.

4,265,672

POWDERED TELEPHONE CABLE FILLING COMPOUND

Basil V. E. Walton, 54 Melrose Crescent, and William E. J. Wannamaker, 121 Avondale Rd., both of Belleville, Ontario, Canada

Filed Nov. 19, 1979, Ser. No. 95,515

Claims priority, application Canada, Nov. 16, 1978, 316343

Int. Cl.³ C04B *11/24*

U.S. Cl. 106—115 **17 Claims**

1. A composition in powder form, adapted for use in filling telecommunications cables, said composition comprising: (A) from about 80% to about 99% by weight of a pulverulent material having a high water absorption capacity, comprising: (i) a finely divided cellulosic material, and (ii) at least one of the following: (a) gypsum; (b) a hydrous aluminum silicate; (c) a sodium aluminosilicate; (d) magnesium oxide; (e) magnesium carbonate; (f) mica powder; (g) talc; (h) a diatomaceous clay; (i) anhydrous aluminum silicate; and (j) finely divided silica; and (B) from about 1% to about 20% by weight of a water-modifying and immobilizing material.

4,265,673

POLYMER SOLUTIONS FOR USE IN OIL RECOVERY CONTAINING A COMPLEXING AGENT FOR MULTIVALENTIONS

Gary W. Pace, and Trevor J. Holding, both of Knowsley, England, assignors to Talres Development (N.A.) N.V., Curacao, Netherlands Antilles

Filed Jun. 20, 1979, Ser. No. 50,322

Claims priority, application United Kingdom, Jun. 23, 1978, 27803/78

Int. Cl.³ C08L *33/26*

U.S. Cl. 106—177 **18 Claims**

1. A process for preparing a polymer solution for use in "polymer based" oil recovery, which comprises, in the absence of surfactant, combining water, a polymer selected from the group consisting of polyacrylamide and cellulose derivative and a complexing agent for multivalent ions and, where the solution so formed does not already contain an alkali metal salt, incorporating therein an alkali metal salt.

4,265,674

ADDITIVE FOR CONCRETE OR MORTAR AND THE USE THEREOF

Gerhard Debus, Rüdesheim; Friedrich Girg, Idstein, and Volker Knittel, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 7, 1979, Ser. No. 64,515

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835423

Int. Cl.³ C04B *7/353*

U.S. Cl. 106—314 **3 Claims**

1. An additive-mixture as a pumping aid for concrete and cement mortar consisting essentially of a water-soluble, non-ionic cellulose ether selected from the group consisting of methylhydroxyethyl cellulose, methylhydroxypropyl cellulose, ethylhydroxyethyl cellulose and hydroxyethyl cellulose, and a non-ionic, low-foaming surface-active agent selected from the group consisting of an optionally modified block polymer of propylene oxide and ethylene oxide, and an alkylaryl poly-(ethylene glycol)ether having a small proportion of ethylene oxide molecules, said surface-active agent being present in a proportion of about 0.5 to 20% by weight, based on the weight of said cellulose ether.

4,265,675

NONTOXIC CELLULOSE SOLVENT AND PROCESS FOR FORMING AND UTILIZING THE SAME

George T. Tsao, West Lafayette, Ind.; Bruce E. Dale, Fort Collins, Colo., and Michael R. Ladisch, West Lafayette, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 884,477, Mar. 8, 1978, abandoned. This application Oct. 3, 1979, Ser. No. 81,539

Int. Cl.³ C13K *1/02*

U.S. Cl. 127—37 **30 Claims**

1. A substantially nontoxic cellulose solvent, comprising:

a metal chelating agent;

a metal compound;

a caustic swelling agent;

and an oxygen scavenging stabilizing agent.

22. A process for recovering cellulose from cellulosic materials, said process comprising:

contacting a cellulosic material with an oxygen scavenger stabilized chelating metal caustic swelling solvent to dissolve the crystalline native cellulose contained in said cellulosic material and to transform the crystalline cellulose to an amorphous state; and

precipitating said amorphous cellulose from said solvent.

29. A process for recovering cellulose from a cellulosic material, said process comprising:

providing a chelating metal caustic swelling solvent, said solvent comprising sodium tartrate, ferric chloride, caustic, and sodium sulfite;

contacting a cellulosic material with said solvent in about a 10:1 to 1:10 weight ratio of cellulosic material to solvent; and

adding water to precipitate cellulose from the solution formed by contacting the cellulosic material with said solvent.

30. The process of claim **29**, wherein said cellulose is hydrolyzed by acid and/or cellulase enzyme to yield glucose.

4,265,676

PROCESS FOR MANUFACTURE OF STRIP-CASTED AL-SHEET MATERIAL WITH IMPROVED MECHANICAL AND THERMOMECHANICAL QUALITIES

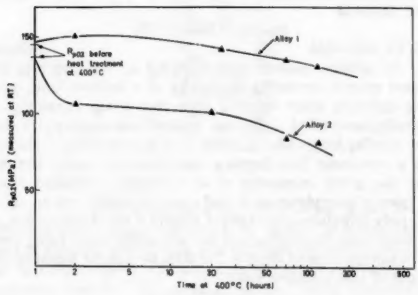
Aasmund E. Nes, Rykkinn, and Sverre Slevolden, Kopervik, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway

Filed Jun. 4, 1979, Ser. No. 45,267

Claims priority, application Norway, Jun. 27, 1978, 782215

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—2 **10 Claims**



1. A process for the manufacture of half-hard aluminun sheet materials having a combination of high strength and high ductility which comprises

casting by continuous strip-casting as a plate a commercially available Al-wrought alloy containing less than 0.5 weight % of at least one recrystallization modifying element selected from the group consisting of Zr, Nb, Ta, Hf, Ni, Cr, Ti, V and W, said modifying element being present substantially in solid solution,

directly cooling the thus casted material to ambient temperature and cold rolling said material to a required thickness,

heating the thus rolled material to a holding temperature of from 400°to 500° C. at a heating rate of less than 50° C./min, and

cooling the material to ambient temperature.

4,265,677

PHOSPHATIZING PRIOR TO CATHODIC ELECTROPAINTING

Gerhard Müller, Hanau, and Werner Rausch, Oberursel, both of Fed. Rep. of Germany, assignors to Oxy Metal Industries Corporation, Warren, Mich.

Filed Feb. 25, 1980, Ser. No. 124,504

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907094

Int. Cl.³ C23F *7/08*

U.S. Cl. 148—6.15 Z **5 Claims**

1. An aqueous acidic solution suitable for treating a metallic surface prior to cathodic electropainting comprising zinc and phosphate ions in a weight ratio of 1:12–110, an additional multivalent cation in an amount not more than 0.5 g/l, and from 0.3 to 2.0 g/l of fluoborate ions.

4,265,678

METAL WIRE CORD

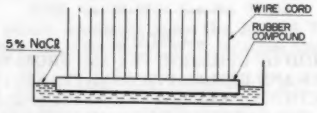
Shunji Hachisuka, Dejima; Shinji Kurashige, Kitakami, and Yasuo Sashiro, Chiyoda, all of Japan, assignors to Tokyo Rope Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 8, 1978, Ser. No. 967,647

Claims priority, application Japan, Dec. 27, 1977, 52-159908; Nov. 22, 1978, 53-143282

Int. Cl.³ C21D *9/52*

U.S. Cl. 148—12 B **8 Claims**



1. A method of manufacturing a metal wire cord, which comprises the steps of:

forming on the surface of a metal wire a coating layer formed of a ternary alloy of copper, zinc and between 0.1 and 50% by weight cobalt to produce a metal wire; and

drawing said metal wire.

4,265,679

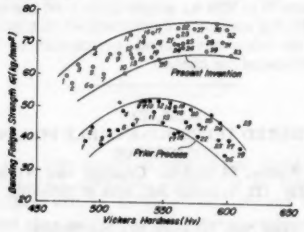
PROCESS FOR PRODUCING STAINLESS STEELS FOR SPRING HAVING A HIGH STRENGTH AND AN EXCELLENT FATIGUE RESISTANCE

Nobuo Ohashi, Funabashi; Yutaka Ono, Ichihara; Kiyohiko Nohara, Chiba; Junichi Shimomura, Chiba, and Tetsuo Miyawaki, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe and Nippon Kinzoku Co., Ltd., Tokyo, both of, Japan

Filed Aug. 23, 1979, Ser. No. 69,050

Int. Cl.³ C21D *7/02*

U.S. Cl. 148—12 E **2 Claims**



1. A process for producing stainless steels for springs having a high strength in the range of about 550–600 Vickers Hardness, and an excellent fatigue resistance of at least 70 kg/mm^2,

which comprises heat treating austenitic stainless steels having such a composition that austenite stability index Md_{30} is 0° C. to +80° C. at a temperature from 750° C. to 1,150° C., subjecting the thus treated steels to a primary working at a temperature from Md_{30} to 500° C. at a reduction rate of not less than 20%, and then subjecting said steels to a secondary working at a temperature from −10° C. to Md_{30} at a reduction rate of not less than 30%, and after the secondary working, tempering the obtained steel sheet at a temperature from 200° C. to not higher than the austenite forming temperature.

4,265,680

METHOD FOR MAKING HOLLOW MAGNETIC PIPE

Robert J. Pelser; Lewis M. Pelser, both of Newbury Park; Robert W. Hill, Westlake Village; Sanford W. Brown, Los Angeles, and Robert G. Fischer, Oxnard, all of Calif., assignors to Astrolab Corp., Santa Ana, Calif.

Filed Mar. 10, 1980, Ser. No. 128,761

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—103 **9 Claims**

1. A method for making hollow magnetic pipe having a magnetic field extending across the hollow of the pipe, which comprises:

(a) forming first and second substantially similar pipe halves from ductile and magnetizable sheet metal;

(b) placing said pipe halves in a pipelike configuration having first and second pairs of adjacently disposed open edges and joining each of said pairs of adjacently disposed open edges with a nonmagnetic seam to form a hollow pipe;

(c) conditioning said hollow pipe to receive and maintain a permanent magnetic state; and

(d) subjecting said conditioned hollow pipe to a magnetic field whereby each side wall of the pipe abutting one nonmagnetic seam acquires a permanent north magnetic pole configuration and each side wall of the pipe abutting the other nonmagnetic seam acquires a permanent south magnetic pole configuration.

4,265,681

METHOD OF PRODUCING LOW LOSS PRESSED MAGNETIC CORES FROM MICROLAMINATIONS

Robert F. Krause, Murrysville; Norman M. Pavlik, Plum Boro, and Kurt A. Grunert, Beaver, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 896,525, Apr. 14, 1978, abandoned. This application Jul. 26, 1979, Ser. No. 60,942

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—111 **12 Claims**

1. A method of making pressed magnetic core components having improved magnetic characteristics (a low core loss property) for use in electrical apparatus, comprising the steps of

(a) providing silicon-iron alloy sheet stock having a thin coating of silicate glass on two opposite sides thereof and having a silicon content of from about 2.5% to 3.5%, a carbon content of up to 0.01%, manganese of from about 0.01% to 0.2%, and sulfur in the amount of from 0.005% to 0.25%,

(b) forming microlaminations from the silicon-iron alloy sheet stock, which microlaminations comprise a coating of silicate glass on two opposite sides thereof,

(c) coating the microlaminations with a dielectric material,

(d) assembling the microlaminates within a mold of predetermined configuration,

(e) compacting the microlaminates into a magnetizable compact, and

(f) annealing the compacted microlaminates to relieve stresses.

10. A method of producing pressed magnetic core components having improved magnetic characteristics (a low core loss property) for use in electrical apparatus, comprising the steps of

(a) providing silicon-iron alloy sheet stock having a thin coating of silicate glass on two opposite sides thereof,

(b) forming particles of predetermined size and shape from said silicon iron alloy having a silicon content of from about 2.5% to about 3.5%, a carbon content of up to 0.01%, manganese of from about 0.01% to 0.2%, and sulfur in the amount of from 0.005% to 0.25%,

(c) annealing the particles in a deoxidizing atmosphere,

(d) coating the microlaminations with a dielectric material,

(e) assembling the particles within a container of predetermined configurations,

(f) compacting the particles into a magnetizable compact, and

(g) annealing the compact to relieve stresses.

4,265,682

HIGH SILICON STEEL THIN STRIPS AND A METHOD FOR PRODUCING THE SAME

Noboru Tsuya, 1-38, Kashiwagi 2-Chome, Sendai, Japan, and Kenichi Arai, Sendai, Japan, assignors to Norboru Tsuya, Sendai, Japan

Filed Dec. 29, 1978, Ser. No. 974,506

Claims priority, application Japan, Sep. 19, 1978, 53/114847; Nov. 15, 1978, 53/141290

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—112 **15 Claims**

1. A method of producing a thin strip of high silicon steel having excellent magnetic properties and good workability comprising the combination of steps of:

preparing a high silicon steel melt having a composition consisting essentially of 4–10% by weight of silicon, less than about 2% of aluminum and the remainder being iron and incidental impurities,

cooling the melt to about 400° C. on a cooling substrate at a cooling rate of from about 10^3 to 10^6°C./sec. to form a thin strip having micro-structure comprising very fine crystal grains without ordered lattics of Fe_3Si.

9. A thin strip of high silicon steel having excellent magnetic properties and good workability, having composition consisting essentially of by weight 4–10% of silicon, less than about 2% of aluminum and the remainder being iron and incidental impurities and having a micro-structure consisting of very fine crystal grains without ordered lattices of Fe_3Si, wherein the fine crystal grains are essentially columnar grains aligned in a direction perpendicular to the surface of the thin strip and have a mean grain diameter of from about 1–100 μm.

4,265,683

DEVELOPMENT OF GRAIN-ORIENTED IRON SHEET FOR ELECTRICAL APPARATUS

Richard D. Blaugher, Churchill Boro, and Richard H. Hopkins, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 7, 1979, Ser. No. 10,112

Int. Cl.³ H01F *1/00*

U.S. Cl. 148—120 **9 Claims**

1. A process for preparing a textured, primary recrystallized, iron-based material suitable for magnetic applications, said process comprising:

(a) deoxidizing material consisting of at least about 99.9 wt.% iron to an oxygen content of less than 50 ppm, said material being substantially free of sulfur and aluminum;

(b) adjusting the carbon content of said material to 0.01–0.02 wt.%;

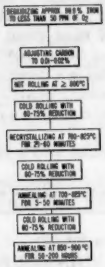
(c) hot rolling said material, maintaining a temperature of at least 800° C., throughout said hot rolling;

(d) cold rolling said material to provide a 60–75% reduction;

(e) recrystallizing said material at 700–825° C. for 20–60 minutes in a non-oxidizing atmosphere;

(f) cold rolling said material to provide a 60–75% reduction;

(g) annealing said material at 700–825° C. for 5–50 minutes in a non-oxidizing atmosphere;
(h) cold rolling said material to provide a 60–75% reduction to give a final thickness; and



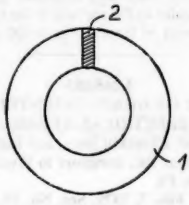
(i) annealing said material for 50–200 hours at 850–900° C. in a reducing atmosphere whereby a high magnetic saturating, primary recrystallized material is produced.

4,265,684

MAGNETIC CORE COMPRISED OF LOW-RETENTIVITY AMORPHOUS ALLOY

Richard Boll, Muhlheim, Fed. Rep. of Germany, assignor to Vacuumschmelze GmbH, Fed. Rep. of Germany

Filed Jul. 16, 1979, Ser. No. 57,971
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1978, 2832731
Int. Cl.³ H01F *1/00*
U.S. Cl. 148—121 **8 Claims**



1. A magnetic core composed of an at least 50% amorphous low-retentivity metal alloy having at least one continuous zone composed of said alloy in crystalline form extending within said core in the manner of an air gap, over at least a portion of the cross-section of said core.

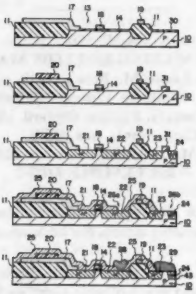
7. A method of producing a magnetic core from a low-retentivity amorphous metal alloy comprising:
forming a core body from an at least 50% amorphous low-retentivity metal alloy, and
converting at least one select continuous zone within said body into a crystalline state so that such zone extends over at least a portion of the cross-section of said body in the manner of an air gap by heating said zone to the crystallization temperature of said alloy.

4,265,685

UTILIZING SIMULTANEOUS MASKING AND DIFFUSION OF PERIPHERAL SUBSTRATE AREAS

Masatoshi Seki, Tachikawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1979, Ser. No. 98,140
Claims priority, application Japan, Jan. 26, 1979, 54-7109
Int. Cl.³ H01L *21/20, 21/22*
U.S. Cl. 148—174 **5 Claims**



1. In a method of producing silicon gate-type MOS integrated circuit devices having polycrystalline silicon resistance, comprising:
a step for forming a field oxide on the main surface of a silicon semiconductor substrate so as to surround areas where transistors are to be formed;
a step for forming a gate oxide having a thickness smaller than that of said field oxide;
a step for forming an elongated strip of polycrystalline silicon which extends from an area selected from said areas onto said field oxide;
a step for forming a first masking layer on the surface of said elongated strip thereby to form a resistor region in said elongated strip;
a step for introducing impurities of a conductivity type opposite to that of said semiconductor substrate into the surface of said elongated strip exposed from said first masking layer and into the selected surfaces of said areas; and
a step for forming a first metal layer which comes into contact with said areas into which are introduced said impurities; the improvement characterized by;
forming a second masking layer on the peripheral surface of said silicon semiconductor substrate such that said impurities will not be introduced into said peripheral surfaces, said second masking layer being formed during said step for forming said first masking layer; and
forming a second metal layer on said peripheral surfaces of said silicon semiconductor substrate into which are not introduced said impurities, said second metal layer being formed during said step for forming said first metal layer, thereby to form a substrate electrode of said silicon semiconductor substrate.

4,265,686

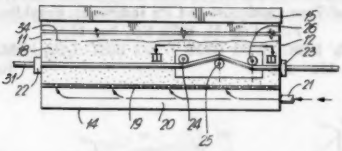
POWER FILLING OF CABLE CORE UNITS

John N. Garner, Pointe Claire, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 13, 1979, Ser. No. 74,970
Int. Cl.³ H01B *13/06*
U.S. Cl. 156—48 **8 Claims**

1. A method of powder filling a cable core unit having a plurality of conductors, said method comprising:
fluidizing a bed of filling powder to form a fluidized bed with a defined upper surface;

passing the core unit along a pass line through the fluidized bed and beneath its defined upper surface with the conductors closed together, the fluidized powder in the bed flowing between the conductors to fill voids within the unit while avoiding attracting the powder to the conductors electrostatically or with other attracting medium; and



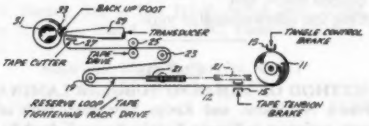
with the conductors closed together and in the fluidized bed, causing the unit to change its direction of movement along the pass line at least once to effect relative displacement of the conductors while maintaining them closed together.

4,265,687

ULTRASONIC TAPE TIE STRAPPING METHOD AND APPARATUS

Paul W. Mercer, Redmond, and Howard P. Stock, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 27, 1977, Ser. No. 864,814
Int. Cl.³ B32B *31/16*; B65B *13/32*
U.S. Cl. 156—73.1 **57 Claims**



1. A method of circumferentially applying strapping tape, bondable by heat and pressure when overlapped, around an article comprising the steps of:

guiding at least one tape convolution around said article and a backup foot such that said convolution includes a region of tape overlap located adjacent to said backup foot;

tightening said at least one tape convolution about said article and said backup foot;

moving said backup foot towards the tip of an ultrasonic transducer;

ultrasonically and transversely vibrating the tip of said ultrasonic transducer against said tape overlap region so as to heat said tape overlap region;

simultaneously with said step of ultrasonically vibrating said tape, pressing with said backup foot said tape overlap region against the tip of said ultrasonic transducer so as to bond together the layers of tape in said tape overlap region;

cutting the bonded tape convolution free in a region immediately adjacent to said bond; and,

removing the backup foot from the bonded tape convolution.

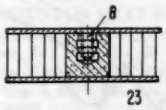
10. Apparatus for circumferentially applying strapping tape as claimed in claim 9 including tape supply means for supplying tape to said wrapping means, said tape supply means containing tape of indeterminate length.

4,265,688

METHOD FOR PRODUCING SANDWICH TYPE STRUCTURAL COMPONENTS

Ekkehard Gorski, Buchholz, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 928,877
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1977, 2736132
Int. Cl.³ B32B *31/16, 3/12*
U.S. Cl. 156—73.1 **5 Claims**



1. A method for manufacturing a sandwich type structural component, comprising the following steps:

(a) providing a prefabricated honeycomb core having open pockets therein,

(b) bonding a first cover layer to one surface of the honeycomb core,

(c) introducing a thermoplastic prepolymer including a foaming agent into said pockets at least at one predetermined location of the structural component, said thermoplastic prepolymer being capable of reacting with said foaming agent to become a thermoplastic foam type material,

(d) bonding a second cover layer to the opposite surface of the honeycomb structure,

(e) applying ultrasonic energy to said at least one location to melt said thermoplastic foam type material and to sufficiently soften one cover layer for the insertion of a connecting means directly through the cover layer without predrilling, and

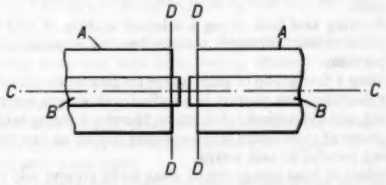
(f) inserting said connecting means directly into the still soft location.

4,265,689

METHODS OF JOINING GLASS OBJECTS

Cyril Jeffrey, Beaconsfield, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Apr. 13, 1979, Ser. No. 29,880
Claims priority, application United Kingdom, Apr. 15, 1978, 14870/78
Int. Cl.³ B32B *31/16*; C03B *23/20, 37/10*; G02B *5/14*
U.S. Cl. 156—73.2 **5 Claims**



1. A method of joining glass objects comprising arranging said glass objects in abutting relationship, applying pressure to said glass objects, to urge them together and subjecting said glass objects to ultrasonic vibrations such that the abutting portions of said glass objects are heated by friction therebetween to the melting point of the glass whereby said glass objects are fused together on the cessation of said ultrasonic vibrations.

4,265,690

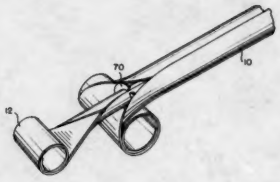
METHOD OF FORMING TRANSMISSION LINES USING TUBULAR EXTENDIBLE STRUCTURES

Herman Lowenhar, 422 Hudson St., New York, N.Y. 10014

Division of Ser. No. 713,289, Aug. 11, 1976, Pat. No. 4,096,459, which is a division of Ser. No. 400,201, Sep. 24, 1973, Pat. No. 3,975,581. This application May 15, 1978, Ser. No. 905,651

Int. Cl.³ H01Q *1/12*; C08J *5/04*

U.S. Cl. 156—161 **13 Claims**



1. The method of producing a web that is furlable when wound flat onto a spool and which will curl longitudinally into a curved tubular shape when unfurled comprising the steps of

forming a web of a composite of a resin having therein a plurality of fibers of two materials each having a selected and different coefficient of thermal expansion to reduce changes in dimension due to temperature variation,

curing to a set state the web of composite material in a curled condition with a desired stress, and winding the web along its length onto a spool.

4,265,691

PROCESS FOR PRODUCING A MULTI-LAYERED GLASS FIBER SHEET

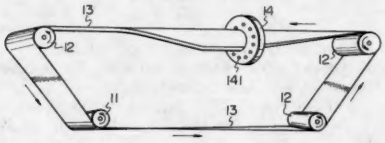
Fumio Usui, 441, Shimofusa, Tama-ku, Kawasaki-shi, Kanagawa-ken, Japan

Filed Oct. 19, 1978, Ser. No. 953,970

Claims priority, application Japan, Mar. 20, 1978, 53-31863

Int. Cl.³ B31C *13/00*

U.S. Cl. 156—172 **10 Claims**



1. A process for continuously producing a multi-layered glass fiber sheet, said process comprising the steps of:

circulating a flat endless belt along a predetermined endless path;

deforming said belt, along a selected section of said path, into a cylindrical shape, thereby forming a cylindrical belt portion;

feeding a first group of glass warps longitudinally along said cylindrical belt portion in a cylindrical pattern surrounding said cylindrical belt portion, thereby forming said first group of glass warps into a cylinder having an axis extending parallel to said warps;

winding at least one group of glass wefts around said cylinder of said first group of glass warps at said cylindrical belt portion at a predetermined helical angle with respect to said cylinder;

feeding a second group of glass warps longitudinally along said cylindrical belt portion in a cylindrical pattern surrounding said cylindrical belt portion, thereby forming a cylindrical product composed of said first and second groups of glass warps and said at least one group of glass wefts; and

cutting said cylindrical product along a line in the longitudinal direction of said cylindrical product, thereby providing a multi-layer glass fiber sheet.

4,265,692

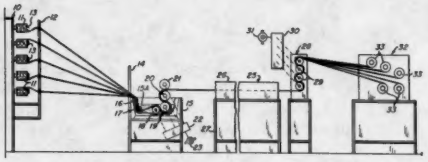
METHOD FOR PRODUCING TEAR TAPE AND SEAL AND TEAR LINE FOR PACKAGING

Arnold F. Stone, Franklin, and William D. Kinnard, Spring Hill, both of Tenn., assignors to CPS Industries, Franklin, Tenn.

Filed Feb. 21, 1979, Ser. No. 13,577

Int. Cl.³ B29C *19/00*; B32B *31/00*; B05C *3/02*; B05D *5/10*

U.S. Cl. 156—180 **10 Claims**



1. A method to produce line or tape for packaging or the like including the steps of:

selecting a fibrous yarn having a desired denier and tensile strength,

passing the selected yarn into a bath of hot-melt adhesive maintained at a desired temperature essentially above the liduidus temperature of the adhesive,

laterally spreading the yarn under a controlled tension within the bath of hot-melt adhesive to cause the adhesive to penetrate and surround the fibrous yarn,

thereafter extruding a coating of adhesive onto yarn in the bath,

passing the adhesive-coated yarn from the bath,

cooling the extruded coating of adhesive on the yarn,

forming the cooled adhesive coating on the yarn into a desired shape, and

coiling the adhesive-coated yarn.

4,265,693

METHOD OF MOLDING TUBULAR LAMINATE

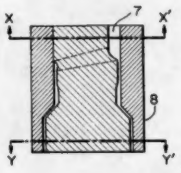
Yoshiharu Nishimoto, and Kengo Yamazaki, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1979, Ser. No. 76,758

Claims priority, application Japan, Sep. 29, 1978, 53/119077

Int. Cl.³ B29D *23/04*

U.S. Cl. 156—218 **3 Claims**



1. A method of molding a tubular laminate, wherein a plurality of flow of thermoplasticized resin are caused to come together at a joining point to prepare a laminated composite flow having a plurality of layers and two side edges, and said composite flow is passed through an annular extrusion die so that said side edges come to abut within said die, thereby forming an integrated tubular flow, characterized in that at least one layer in said composite flow has a lower viscosity than the other layer(s) and said layer of the lower viscosity is formed into a convex cross sectional shape in the preparation step of said composite flow.

4,265,694

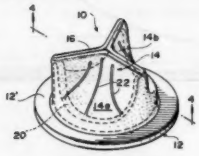
METHOD OF MAKING UNITIZED THREE LEAFLET HEART VALVE

John W. Boretos, Rockville, Md., and Norio Iriguchi, Fuji, Japan, assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

Division of Ser. No. 969,571, Dec. 14, 1978, Pat. No. 4,222,126. This application Jan. 22, 1980, Ser. No. 114,298

Int. Cl.³ B29C *27/00*

U.S. Cl. 156—242 **9 Claims**



1. A method of producing an artificial heart valve, comprising the steps of:

molding an artificial heart framework, including a base and struts, using polyurethane resin;

forming an elastomeric membrane, of polyurethane resin which is thin relative to said framework, and forming a thickened commissure along the leading edge of said membrane, and forming a plurality of lines, thicker than said membrane, radiating from the base of said membrane;

joining said framework with said elastomeric membrane using an adhesive cement, and permanently bonding said membrane to said framework.

4,265,695

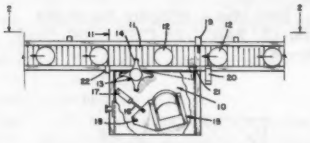
LABELING APPARATUS

Byron H. Hurley, Rte. 1, Box 214-B, Julian, N.C. 27283, and Walter G. Ricks, Rte. 1, Box 108C, Pleasant Garden, N.C. 27313

Filed Jun. 14, 1979, Ser. No. 48,317

Int. Cl.³ B65C *9/02, 9/10*

U.S. Cl. 156—285 **11 Claims**



1. Labeling apparatus for a continuously moving object comprising: a base, a turnstile mounted of said base, said turnstile freely rotatable from a first label receiving to a second label dispensing position, said turnstile having a label engaging surface, said surface defining a fluid aperture, said turnstile having a cavity positioned aft of said surface and in fluid communication therewith, a fixed center post means, said turnstile rotatable about said post means, said post means including a fluid passageway communicating with the cavity of said turnstile when said turnstile is in the label receiving position, an upper cover member, said upper cover member including a fluid passageway communicating with the cavity of said turnstile when said turnstile is in the label dispensing position, whereby the continuously moving object rotates said turnstile.

4,265,696

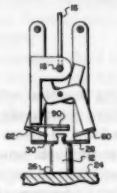
APPARATUS FOR HEAT SEALING

Daniel G. Graves; Vernard L. Graves, both of Duncanville, and Ernest W. Knudsen, Jr., Arlington, all of Tex., assignors to Universal Precision Machining Co., Dallas, Tex.

Filed Sep. 5, 1979, Ser. No. 72,648

Int. Cl.³ B65B *7/14, 51/14, 51/16, 51/30*

U.S. Cl. 156—443 **14 Claims**



1. Apparatus for manually sealing heat sealable material in a manner requiring the use of only one of the two hands of an operator by incorporating a single actuation drive train to sequentially grip, heat and squeeze heat sealable material positioned therein, said apparatus comprising:

at least one actuation handle for manual engagement by an operator and select arcuate motion;

a drive shaft connected to said handle at one end and rotationally responsive to arcuate motion of said handle;

a support frame supporting said drive shaft for rotational movement;

a heat sealing element coupled to said drive shaft for movement in response to rotation of said drive shaft and the heating of material disposed adjacent thereto;

first and second gripping jaws pivotally mounted to said support frame;

first cam linkage secured upon said drive shaft adjacent said gripping jaws for cammed actuation, separation and engagement of said gripping jaws in response to rotation of said drive shaft;

means biasing said gripping jaws against said first cam linkage;

first and second squeezing jaws disposed between said gripping jaws and said heat sealing element and pivotally mounted to said support frame;

second cam linkage secured upon said drive shaft adjacent said squeezing jaws for cammed actuation, separation and engagement of said squeezing jaws in response to rotation of said drive shaft;

means biasing said squeezing jaws adjacent said second cam linkage;

means for supporting said material to be sealed between said support jaws and said gripping jaws; and

said first and second cam linkages being connected to said drive shaft relative to said heat sealing element for sequential actuation of said gripping jaws and said squeezing jaws relative to the rotation of said drive shaft by said handle and the positioning of said heating element relative to said material to be sealed.

4,265,697

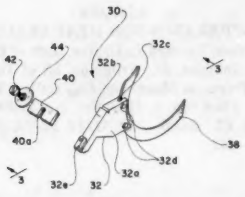
SPRING LOADED FREE FLOATING STRIPPER FINGER WITH STABILIZER FOR A WEB CORRUGATING MACHINE

Joseph A. King, 3020 Fields Dr., Raleigh, N.C. 27603

Continuation-in-part of Ser. No. 110,408, Jan. 8, 1980, abandoned. This application Jan. 24, 1980, Ser. No. 114,992

Int. Cl.[3] B31F *1/00*

U.S. Cl. 156—473 11 Claims



1. In a web corrugating machine including first and second rotating corrugated rollers operatively meshed at a corrugating nip through which a flat web passes to become transformed into a corrugated web as the web moves from a first rotating corrugated roller, through the corrugating nip and onto said second corrugated roller, a pressure roll operatively disposed adjacent said second corrugated roller at a pressure nip through which the corrugated web and another flat web pass and are joined to form single face board, the improvement comprising: a stripper finger holder assembly for positioning and supporting respective stripper fingers between said nips in a generally rigid posture such that each stripper finger extends normal with respect to the axes of said corrugated rollers, said stripper finger holder assembly including: a support bar extending adjacent said corrugated rollers and generally parallel with respect to the axes thereof and including a plurality of laterally spaced vertical cut outs formed therein; a plurality of axially spaced finger holders mounted to said support bar; securing means for securing said finger holder to said support bar; stripper finger means secured to respective finger holders and extending therefrom such that the stripper fingers generally engage the corrugated web passing through the corrugated nip between said first and second corrugated rollers and urge the corrugated web from the first corrugated roller to a path that causes the corrugated web to follow the second corrugated roller and wherein said finger means generally supports the corrugated web about a substantial portion of the second corrugated roller between the corrugated nip and pressure nip; and wherein each finger holder includes an attaching edge that generally lies directly against said support bar when the respective finger holder is attached thereto, and wherein said finger holder further includes upstanding locking member means that projects above the attaching edge of said finger holder for engagement with said support bar at a level above the interface of said attaching edge and said support bar for preventing said finger holder from twisting side to side and to assure that the finger holder and associated stripper finger means is maintained in a rigid posture with the finger means extending in a plane normal to the axes of said first and second corrugated rollers, said upstanding locking member means including an upstanding locking stud that projects upwardly from the attaching edge of said finger holder and wherein said locking stud is adapted to fit and mate within said vertical cut out such that the engagement of said locking stud with said vertical cut out prevents said finger holder from twisting side to side.

4,265,698

PROCESS OF FORMING A SOUND NEEDLE AND SOUND NEEDLE CONSTRUCTION

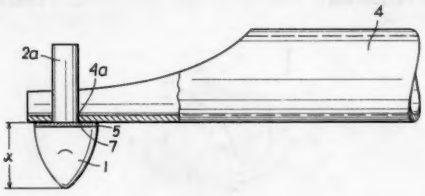
Gunter Nawrata, Mistelbach, Langendorf, Austria, assignor to AKG Akustische u. Kino-geräte Gesellschaft m.b.H., Austria

Filed Dec. 14, 1979, Ser. No. 103,493

Claims priority, application Austria, Oct. 12, 1979, 6663/79

Int. Cl.[3] C23F *1/02*

U.S. Cl. 156—630 3 Claims



1. A process of forming a sound needle for the scanning of mechanical sound carriers preferably records after a needle has been secured to a holder which has a diameter comparable to the maximum diameter of the needle on a surface thereof opposite to the needle tip and using a carrier having an opening therethrough, comprising reducing the diameter of the holder until it is a fraction of its original diameter, inserting the holder into the opening of the carrier and applying a securing material between the surface of the needle adjacent to and radially outwardly of the holder and between the carrier and the needle so as to secure the needle to the carrier, and reducing at least a major portion of the holder after the needle is secured to the carrier.

4,265,699

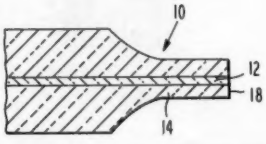
ETCHING OF OPTICAL FIBERS

Ivan Ladany, Stockton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 4, 1979, Ser. No. 36,058

Int. Cl.[3] B44C *1/22;* C03C *15/00, 25/06*

U.S. Cl. 156—657 5 Claims



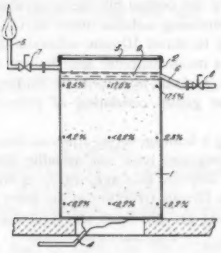
1. A method of etching a single mode optical fiber comprising a fused silica core with a borosilicate glass cladding and having a flat end face whereby a portion of the cladding is removed while leaving the end face flat or slightly concave which consists essentially of etching an end portion of the fiber in a concentrated aqueous hydrofluoric acid solution containing an amount of ammonium fluoride, ammonium bifluoride or mixtures thereof effective for reducing the diameter of the fiber while leaving the end face flat or slightly concave.

4,265,700

METHOD OF SEPARATING A SOLID AND A LIQUID PHASE OF A MASS

Per A. Billgren, Söderfors, and Stig A. Karlsson, Tierp, both of Sweden, assignors to Uddeholms Aktiebolag AB, Hagfors, Sweden

PCT No. PCT /SE78/00029, § 371 Date May 9, 1979, § 102(e) Date May 9, 1979, PCT Pub. No. WO79/00137, PCT Pub. Date Mar. 23, 1979.
This PCT application filed May 9, 1979, Ser. No. 61,292
Claims priority, application Sweden, Sep. 9, 1977, 7710126
Int. Cl.[3] B01D *1/00*; C22B *1/00*, *7/00*; F26B *3/00*
U.S. Cl. 159—47 R 5 Claims



1. A method of separating a fine-grained close-packed solid material from a liquid with which the fine-grained solid material is saturated, said process comprising:

(a) collecting a mass of said fine-grained solid material saturated with said liquid in a container which is closed to the entry of air while in operation,

(b) heating the mass in the container from underneath to force the liquid in the upper part of said mass upwards through the mass towards the upper surface thereof by evaporating said liquid in an evaporation zone starting in the lower part of the mass,

(c) collecting the liquid at the upper part of the mass and discharging the liquid from the container,

(d) moving the evaporation zone successively upwards in the mass by continued heating of said container from underneath, and

(e) discharging gas obtained above the surface of said mass from the container, and

(f) controlling the heating of (b)

(1) such that the gas pressure Pgas in the lower part of the mass is higher than the hydrostatic pressure exerted by the mass, to satisfy the expression

$$P_{atm}+\rho liquid\cdot g\cdot(h_1+h_2) < P_{gas} < P_{atm}+\rho mass \cdot g\cdot h_2+\rho liquid\cdot g\cdot h_1$$

where ρ indicates density, g indicates gravity acceleration, h_1 indicates the height of liquid collected on the surface of the mass and h_2 indicates the height of the liquid saturated parts of the mass, and

(2) so as to satisfy the expression

$$dv/dt = A\cdot\alpha\cdot(dp/dy)$$

where

A = horizontal section area

α = permeability

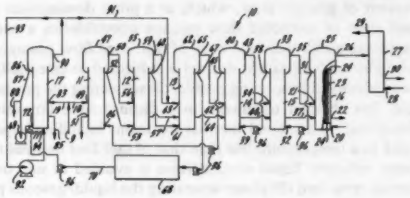
dp/dy = pressure gradient in a vertical direction.

4,265,701

LIQUID CONCENTRATION METHOD

Henry G. Lankenau, Fort Myers, Fla., assignor to Ecodyne Corporation, Lincolnshire, Ill.

Filed Jan. 7, 1980, Ser. No. 110,417
Int. Cl.[3] B01D *1/28*
U.S. Cl. 159—47 WL 9 Claims



1. The process for increasing the solids content of a liquid-solids mixture by evaporation, comprising:

A. passing said mixture from an entrance end to a discharge end of an concentrator;

B. passing a high temperature fluid through said concentrator in heat transfer relationship with said mixture so as to convert some of the liquid of said mixture to a heated vapor and to concentrate the solids in the remaining liquid;

C. removing said heated vapor from said concentrator;

D. recovering at least some of the removed heated vapor;

E. passing a sufficient amount of the recovered vapor into the entrance end of said concentrator so as to provide a predetermined fluid velocity through said concentrator sufficient to substantially prevent deposit of solids therewithin.

7. The method of preventing solids from depositing on a heat exchange surface of apparatus which increases the solids content of a liquid-solids mixture by evaporating liquid from said mixture thereby providing a vapor as it contacts said surface, comprising feeding a sufficient amount of said vapor into said mixture so as to provide a velocity greater than about 20 feet per second over said surface.

4,265,702

METHOD AND APPARATUS FOR THE TREATMENT OF HEAT-SENSITIVE MATERIALS

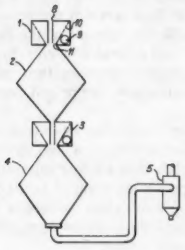
Francois Prudhon, Versailles, and Augustin Scicluna, Aubervilliers, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 921,073, Jun. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 872,151, Jan. 25, 1978, abandoned, which is a continuation-in-part of Ser. No. 770,802, Feb. 22, 1977, abandoned, which is a continuation of Ser. No. 479,774, Jun. 17, 1974, abandoned. This application Mar. 12, 1979, Ser. No. 19,584
Claims priority, application France, Jul. 1, 1977, 77 20287
Int. Cl.[3] B01D *1/16*
U.S. Cl. 159—48 R 20 Claims

1. A process for the treatment of heat-sensitive materials by the intimate contacting of plural, physically disparate phases, comprising (1) (i) a first thermal flash treatment including establishing a vertically descending current of axially extending, axially symmetrical helical flow of a first gaseous phase, (ii) separately establishing a current of coaxially downwardly vertically extending, rectilinear continuous jet stream of a physically disparate second liquid paste or pulp phase, (iii) maintaining said currents of said first and said second phases physically separate from each other, (iv) circulating and directing said currents which comprise the plural phases to a zone of restricted flow passage with respect to said helical flow, (v) at said zone of restricted flow passage, converging and intimately, homogeneously admixing said plural currents, and

disintegrating into a multitude of substantially equally sized droplets and entraining said rectilinear jet stream within said helical current of gaseous flow, and maintaining at such zone of convergence a momentum of the first phase helical flow of at least 100 times greater than the momentum of the second phase, coaxial rectilinear jet stream, (vi) concurrently establishing a flow defining a layered horizontal stack of a plurality of hyperboloids by means of the trajectory of said helical current of gaseous flow, which, at a point downstream from said zone of restricted flow passage coestablishes a zone of narrower width than said zone of restricted flow passage, and whereby each entrained droplet is subjected to essentially the same historical processing profile; (2) subjecting the product of said first thermal treatment, in a distinct zone downstream therefrom, to a second thermal treatment including exposing same to a temperature less than that of said first thermal treatment, whereby liquid condensation is avoided in said downstream zone; and (3) phase separating the liquid/gaseous product admixture.

9. A phase contactor for the treatment of heat-sensitive materials by the intimate contacting of plural, physically disparate phases, which comprises (1) (i) a first thermal flash treatment zone including a distribution zone, said distribution zone being comprised of means for establishing a vertically descending current of axially extending, axially symmetrical helical flow of a first gaseous phase, means for separately establishing a current of coaxially downwardly vertically extending, rectilinear continuous jet stream of a physically disparate second liquid paste or pulp phase, and means for insuring physical separation from each other of said currents of said first and second phases, (ii) a contact zone, said contact zone being comprised of a zone of restricted flow passage with respect to the means for establishing the helical flow, means for the convergence and intimate homogeneous admixture of the separately supplied disparate phases, means for imparting a momentum to the gaseous first phase helical flow which is at least 100 times greater than the momentum of the second liquid phase, coaxial rectilinear jet stream, means for disintegrating into a multitude of substantially equally sized droplets and entraining said rectilinear jet stream within said helical current of gaseous flow, means for concurrently establishing a flow defining a layered horizontal stack of a plurality of hyperboloids via the trajectory of said helical current of gaseous flow, means for establishing, at a point downstream from said zone of restricted flow passage, a flow zone of narrower width than said zone of restricted flow passage, and whereby means are co-established as to subject each entrained droplet to essentially the same historical processing profile; (2) a second distinct thermal treatment zone, at a point downstream from said first thermal treatment zone, including means for subjecting the product of first thermal treatment to a temperature less than that of said first thermal treatment while avoiding liquid condensation in said second thermal treatment zone; and (3) a phase separation zone, including means for separating liquid/-gaseous product admixture.



4,265,703
METHOD OF PREPARING A FIBROUS STRUCTURE CONTAINING METALLIC FIBERS

Jacques Terliska, Rives, France, assignor to Arjomari-Prioux, Paris, France

Filed May 15, 1979, Ser. No. 39,151
Claims priority, application France, May 17, 1978, 78 14617
Int. Cl.³ D21H 5/18
U.S. Cl. 162—146 **4 Claims**

1. A method for the preparation of a fibrous structure comprising metallic fibers by the use of papermaking techniques, said method comprising the steps of:

(a) preparing agglomerates of metallic fibers and a hydrosoluble binding agent by coating said fibers with said binder by:

(i) subjecting a bundle of metallic fibers to a bath of the hydrosoluble binding agent to produce a coated bundle,

(ii) drying said coated bundle, and

(iii) cutting the coated bundle to produce said agglomerates comprising metallic fibers having a length less than or equal to about 10 mm, wherein said metallic fibers having a mean diameter less than or equal to about 30 microns, and said hydrosoluble binding agent is selected from the group consisting of polyvinyl alcohol and starch;

(b) preparing a homogeneous aqueous dispersion by mixing said agglomerates with non-metallic fibers and water to uniformly disperse said agglomerates into fibers; and

(c) forming a fibrous structure in the form of a sheet by wet papermaking process from said aqueous dispersion.

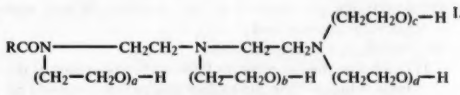
4,265,704
METHOD OF DISPERSING BUNDLES OF GLASS FIBERS FOR MAKING GLASS FIBER MATS BY THE WET-LAID PROCESS

Roop C. Nahta, Charlotte, N.C., assignor to GAF Corporation, New York, N.Y.

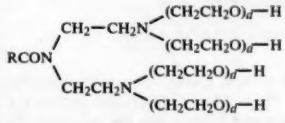
Filed Mar. 30, 1979, Ser. No. 25,536
Int. Cl.³ D21H 5/18
U.S. Cl. 162—156 **11 Claims**

1. In the manufacture of uniform glass mats at a high rate of production by the wet-laid process, the improved method which comprises:

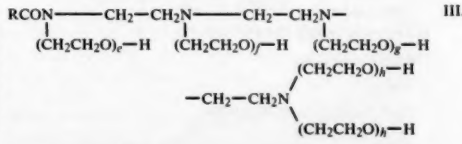
forming an aqueous dispersion of glass fibers by mixing bundles of said fibers of about ¼ to 3 inches in length in an aqueous medium at a fiber consistency of about 0.001 to 3% with about 5–500 ppm of a dispersant which is a polyethoxylated derivative of an amide condensation product of fatty acids and polyethylenepolyamines, said product comprises predominately a mixture of the I–IV compounds as defined below:



I.



II.



III.

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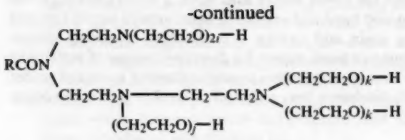


IV.

wherein a through k are positive integers; a and e can be simultaneously or individually zero; b, f, g and j can be individually, simultaneously or in any combination, zero; b cannot be zero unless a is zero; f and g cannot be zero unless e is zero; $200 \geqq a+b+2c+4d+e+f+g+2h+2i+j+2k \geqq 10$; and R is alkyl, C_8–C_{30},

thereby to substantially disperse said bundles into individual fibers within the aqueous medium, and,

passing said dispersion through a mat-forming screen to form the desired uniform glass fiber mat.

4,265,705

APPARATUS FOR CLEANING DOCTOR BLADES IN PAPER MACHINES

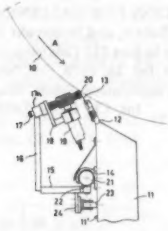
Markku Pyykkönen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Jun. 12, 1979, Ser. No. 47,868

Claims priority, application Finland, Jun. 16, 1978, 781935

Int. Cl.³ D21F *3/00*

U.S. Cl. 162—272 **7 Claims**



1. In a paper making machine, apparatus for cleaning a doctor blade which extends across a roll thereof in the cross-machine direction in operative cleaning relationship therewith, comprising:

frame means mounted in the area of said doctor blade for oscillating movement with respect thereto in a manner such that said frame means can traverse over substantially the entire length of said doctor blade in the cross-machine direction;

drive means coupled to said frame means for causing the latter to oscillate in the cross-machine direction; and

means for cleaning the doctor blade carried by said frame means, said doctor blade cleaning means being adapted to come into cleaning contact with said doctor blade upon said frame means being caused to oscillate through the actuation of said drive means, said cleaning means comprising a rotatable, disc-shaped brush movably mounted with respect to said frame means; and

motor means attached to said frame means for rotating said brush with respect to said frame means as the latter undergoes oscillating movement, whereby impurities deposited on said doctor blade can be removed therefrom during operation of said paper making machine.

4,265,706

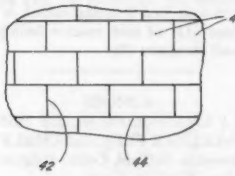
DRAINAGE DEVICE WITH BONDED WEAR SURFACE AND METHOD OF FABRICATION

William M. Fulton, Wellesley, Mass., assignor to Albany International Corp., Menands, N.Y.

Filed Nov. 2, 1978, Ser. No. 957,134

Int. Cl.³ D21F *7/00*

U.S. Cl. 162—352 **4 Claims**



1. A drainage device adopted to be mounted on a papermaking machine under a moving web and positioned to support the web and to engage the undersurface of the web as it passes thereover to extract fluid downwardly from the web, the drainage device comprising; a main body portion, a multiplicity of wear resistant wafers, said main body portion and said wafers having substantially the same coefficient of thermal expansion, a bonding material affixing said wafers on the main body portion with the upper surface of the wafers forming a wear surface and an extraction surface for doctoring fluid from the moving web as it passes over said drainage device, and in which said wafers are rectangular and aligned in a multiplicity of rows.

4,265,707

METHOD AND APPARATUS FOR SEPARATING FISSION AND ACTIVATION PRODUCTS FROM GAS ATMOSPHERES

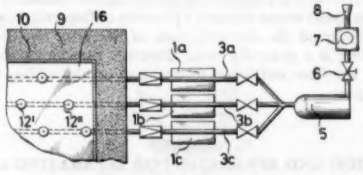
Klemens Schwarzer, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschränkter Haftung, Jülich, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 965,910

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2755881

Int. Cl.² G21C *9/00*; B01D *57/00*

U.S. Cl. 176—37 **7 Claims**



1. A method of separating nuclear fission and activation products from a gaseous atmosphere in which said products are found, said method comprising the step of introducing and dispersing, into said gaseous atmosphere containing said products, at least 1 kg, per 50 m^3 of atmosphere volume of fine dry particles of a substance inert with respect to said atmosphere having an average particle size in the range of from 0.3 to 5 μm.

4. Apparatus for separating nuclear fission and activation products from a gas atmosphere containing said products within the reactor building of a gas-cooled nuclear reactor having outer walls (**9**) of pre-stressed concrete equipped with a liner (**10**), comprising:

a supply hopper container containing fine dry particles of a substance inert with respect to said atmosphere and hav-

ing an average particle size in the range of from 0.3 to 5 μm (1) a pneumatic feed ine (3) and a source of compressed gas (4,5,6,7) for supplying to said atmosphere said fine dry particles pneumatically, said hopper container having a feed outlet (2) opening into said pneumatic feed line (3),

said feed line being connected at its external end to said source of compressed gas (4,5,6,7), and also passing through said concrete wall structure,

and having at least one dispersion nozzle for said particles connected to said feed line and which is situated in the internal space (11) of said reactor building within said concrete wall structure (9).

4,265,708

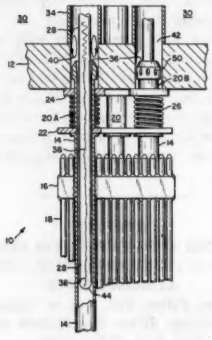
RADIALLY CHANNELED GUIDE POST FOR A NUCLEAR FUEL ASSEMBLY

Frederick D. Lawrence, Suffield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 26, 1978, Ser. No. 973,502

Int. Cl.³ G21C *3/30, 7/08*

U.S. Cl. 176—78 **4 Claims**



1. In a nuclear reactor fuel assembly having a control rod guide tube including a guide post at its upper end, the guide post having a uniform inner diameter, the tube and post adapted to receive a reciprocating control rod from above and a coolant flow from below, wherein the improvement comprises the guide post having an upper portion with a flow restriction having a smaller diameter than the remainder of the tube, and wall means defining a plurality of flow relief channels spaced around the circumference of the post, the channels extending in a generally radial direction from inside the tube below the flow restriction to openings on the surface of the guide post.

4,265,709

METHOD AND APPARATUS FOR SEPARATING GASES AND SOLIDS DURING THE CARBONIZATION OF COAL

Janos Bocsanczy, Recklinghausen; Ludwig Offermann, Datteln, and Dieter Stalherm, Recklinghausen, all of Fed. Rep. of Germany, assignors to Firma Carl Still, Fed. Rep. of Germany

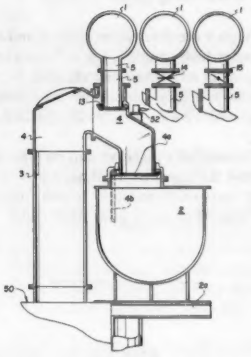
Filed Feb. 5, 1979, Ser. No. 9,602

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2804934

Int. Cl.³ C10B *27/04, 27/06*

U.S. Cl. 201—4 **9 Claims**

1. A device for separating gases and solids, particularly coal dust, during the carbonization of coal, particularly predried and preheated fine coal in coke ovens which are arranged in a battery, comprising, a vertically extending standpipe extending upwardly from the top of a battery having a bend at the top thereof extending outwardly and downwardly towards a lower end, a longitudinally extending collecting main connected into the lower end of said bend, a solids discharge line overlying said bend and extending substantially parallel to said collecting main and having a connection extending downwardly into said bend, means for directing a spray of water into the bend over its connection to said collecting main and under said solids discharge line, a shutoff control in said connection,



a combustion furnace adjacent the battery, and exhauster means connected between said solids discharge line and said combustion furnace for supplying solid-laden gases to said combustion furnace for a combustion therein whereby said solids discharge line with said laden gases remains substantially dry.

4,265,710

PROCESS FOR CALCINING COKE

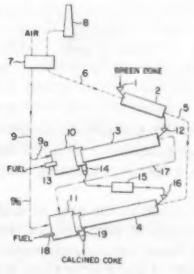
Kosaku Noguchi, Tokyo, and Nobuyuki Komi, Mitaka, both of Japan, assignors to Koa Oil Company, Limited, Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 57,674

Claims priority, application Japan, Mar. 8, 1979, 54-26144

Int. Cl.³ C10B *7/00*

U.S. Cl. 201—27 **10 Claims**



1. A process for calcining green coke, obtained by a delayed coking process, in at least three stages of heating furnaces which are connected in series, the control of the temperature and the adjustment of the atmosphere in each furnace being independently carried out, which process comprises carrying out, in the respective furnaces in the below indicated order, the steps of:

(a) in the first stage, evaporating the water contained in the green coke, drying the resultant coke, and preheating the dried coke to a temperature of 300° to 400° C. by means of a gas having a temperature of 900° to 1,200° C. exiting from the below stated third stage, said gas flowing countercurrently with the green coke in the first stage;

(b) in the second stage, distilling off the volatile matter from

the preheated coke, and preliminarily calcining the resultant coke at a temperature of 600° to 1,000° C.; and

(c) in the third stage, burning the volatile matter resulting from the step (b), and calcining the coke at a temperature of 1,200° to 1,500° C. for 10 to 30 minutes,

the coke from the step (b), after being once cooled to a temperature between room temperature and 200° C., being introduced into the step (c).

4,265,711

METHOD OF ENHANCING DISTILLATE YIELD IN A HYDROCARBONACEOUS MATERIAL THERMOCRACKING PROCESS

William K. T. Gleim, 1250 NW. 120th St., Seattle, Wash. 98177

Filed Oct. 23, 1979, Ser. No. 87,505

Int. Cl.³ B01D *3/34;* C07G *7/20;* C10B *57/18;* G10K *3/00*

U.S. Cl. 201—29 **17 Claims**

1. In the destructive distillation of a hydrocarbonaceous distilland to form a vaporous overhead phase which thereafter is condensed to form liquid distillate containing hydrocarbons boiling within the range of from about 190° C. to about 210° C., the improvement which comprises:

(a) introducing maleic anhydride into the vaporous overhead phase in an amount of from about 5% to about 20% by weight based on the amount of distillate obtained, said introduction being effected prior to condensation of the vaporous overhead phase to form said liquid distillate;

(b) recovering from said liquid distillate a fraction boiling within the range of from about 190° C. to about 210° C. containing unreacted maleic anhydride; and,

(c) recycling at least a portion of the fraction recovered in step (b) containing unreacted maleic anhydride and introducing same to the vaporous overhead phase of step (a) prior to condensation of said overhead phase to form liquid distillate.

4,265,712

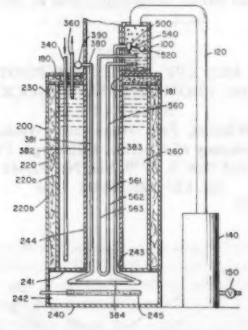
WATER PURIFICATION SYSTEM

Peter J. McLean, 367 Askin Blvd., Windsor, Ontario, Canada (N9B 2X1)

Filed Mar. 9, 1979, Ser. No. 19,176

Int. Cl.³ C02F *1/04*

U.S. Cl. 202—166 **1 Claim**



1. The combination with an upright domestic hot water tank having a gas burner adjacent the bottom of said tank for heating water in said tank, of a water container for containing water separate from the water in said tank, means providing a vertical passage extending generally centrally through said tank for the exhaust of gaseous products of combustion of said gas burner, a conduit to carry hot water from said tank to said container, said conduit having a U-shaped portion composed of vertical sections disposed lengthwise within said passage joined at their lower ends by a connecting portion spaced closely above said gas burner to be heated thereby, a valve for said conduit, a collection receptacle for condensed water, and a duct leading from said container to convey water vapor formed in said container to said receptacle.

4,265,713

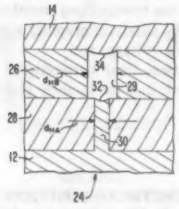
METHOD AND APPARATUS FOR DISTILLATION

Dah Y. Cheng, Los Altos Hills, Calif., assignor to International Power Technology, Inc., Sunnyvale, Calif.

Filed Feb. 14, 1979, Ser. No. 12,047

Int. Cl.³ B01D *3/00, 13/00*

U.S. Cl. 203—10 **7 Claims**



1. A method of thermal membrane distillation for distilling aqueous solutions comprising:

providing a thin porous hydrophobic layer separating an aqueous solution from fresh water;

providing a sufficient temperature gradient across a porous hydrophobic layer so that liquid water evaporates on the aqueous solution side of the pores of the hydrophobic layer and condenses as pure water on the pure water side of the pores of the hydrophobic layer; and

providing a hydrophilic layer on the aqueous solution side of the hydrophobic layer for preventing aqueous liquid intrusion within the pores of the hydrophobic layer.

4,265,714

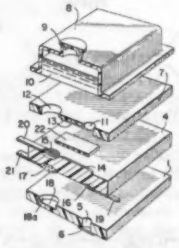
GAS SENSING AND MEASURING DEVICE AND PROCESS USING CATALYTIC GRAPHITE SENSING ELECTRODE

Mary E. Nolan, Topsfield; John A. Kosek, Danvers, and Anthony B. La Conti, Lynnfield, all of Mass., assignors to General Electric Company, Wilmington, Mass.

Filed Mar. 24, 1980, Ser. No. 133,163

Int. Cl.³ G01N *27/52*

U.S. Cl. 204—1 T **41 Claims**



1. In an electrochemical gas-sensing device of the type having a hydrated, solid polymer electrolyte ion transporting membrane, catalytic sensing and reference electrodes positioned on one side of the membrane and a counter electrode positioned on the opposite side of the membrane, said electrodes being bonded to the ion transporting membrane, means for exposing the sensing electrode to a gas to be sensed and means for measuring a current which flows between the sens-

ing and counter electrodes while a voltage applied to the sensing electrode is maintained constant, the improvement being a sensing electrode comprising graphite bonded to the solid polymer electrolyte ion transporting membrane.

24. A method for the electrochemical detection of a gas comprising:

(a) passing a gaseous sample containing the gas to a catalytic graphite sensing electrode in an electrochemical gas-sensing cell having a hydrated, solid polymer electrolyte ion transporting membrane, the catalytic sensing electrode and a reference electrode positioned on one side of the membrane and a counter electrode positioned on the opposite side of the membrane, said electrodes being bonded to the ion transporting membrane;

(b) maintaining the catalytic graphite sensing electrode at a constant applied voltage; and

(c) detecting current flow between the catalytic graphite sensing electrode and the counter electrode.

4,265,715
SILVER ELECTRODEPOSITION PROCESS

Donald R. Rosegren, DuMont; Noreen C. Johnson (Bulsiewicz), Maywood, both of N.J., and Peter Stevens, Hacienda Heights, Calif., assignors to Oxy Metal Industries Corporation, Warren, Mich.

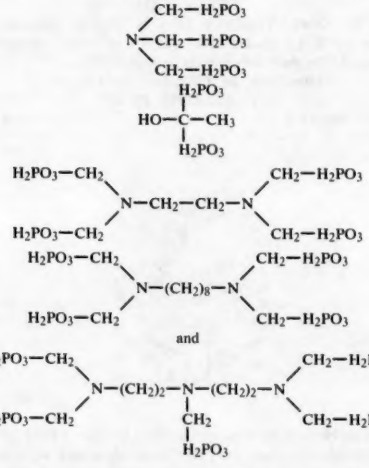
Filed Jul. 13, 1979, Ser. No. 57,471
Int. Cl.[3] C25D *3/46*
U.S. Cl. 204—46 R **5 Claims**

1. A method for the electrodeposition of metallic silver which comprises the step of electrolizing an electroplating bath, which bath consists essentially of an aqueous solution of a composition consisting essentially of a mixture of:

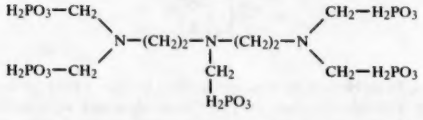
(a) a soluble silver compound;

(b) a non-cyanide electrolyte; and

(c) An amount of an organic phosphonate compound effective to produce a smooth, adherent silver deposit, which compound is selected from among the group consisting of:



and

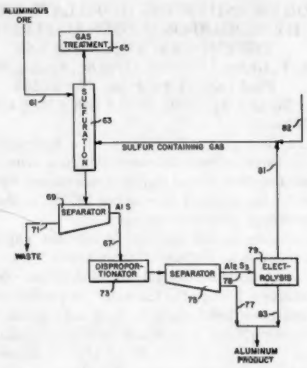


which aqueous solution has a pH above 7 and is at a temperature at which the bath produces galvanic deposits and wherein the electrolysis of said electroplating bath is carried out at a current density of at least 800 amperes/square foot to form a smooth adherent silver deposit.

4,265,716
METHOD OF WINNING ALUMINUM METAL FROM ALUMINOUS ORE

Raouf O. Loutfy; Rudolf Keller, both of Naperville, and Neng-Ping Yao, Clarendon Hills, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 14, 1979, Ser. No. 48,332
Int. Cl.[3] C22B *21/02*; C25C *3/06*
U.S. Cl. 204—67 **10 Claims**



1. A method of winning aluminum metal from aluminous ore containing alumina comprising:

contacting said ore with a sulfur-containing gas and with carbon at a temperature of 1500–1600 K to produce aluminum monosulfide liquid and carbon monoxide gas;

separating in a solid-liquid type separation said aluminum monosulfide from a solid phase containing impurities and residual reactants;

cooling said aluminum monosulfide to a temperature of 1100–1370 K to cause it to disproportionate to aluminum sulfide and molten aluminum metal;

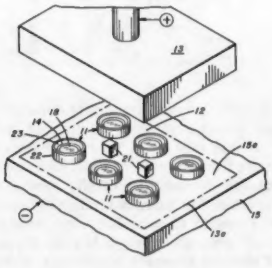
electrolytically decomposing said aluminum sulfide to molten aluminum metal and sulfur gas; and

separating said molten aluminum metal as product.

4,265,717
METHOD AND APPARATUS FOR PROTECTING ELECTRODES FROM THERMAL SHOCK DURING START UP

Raymond D. Wiltzius, East Wenatchee, Wash., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 8, 1979, Ser. No. 92,441
Int. Cl.[3] C25C *3/06, 3/08*
U.S. Cl. 204—67 **32 Claims**



1. A method for starting up an electrolytic cell operated at

an elevated temperature and comprising an anode and a cathode spaced from the anode, said cathode including at least one hollow body defining a cavity open at a distal end closest the anode and closed at a proximal end opposed to the distal end, said method comprising the steps of

inserting into the cavity a heat conductor means comprising a metal plug having a melting point less than the melting point of aluminum, and

heating the cell to its operating temperature.

4,265,718

METHOD FOR PRODUCING HYDROXYLATED NICKEL COMPOUNDS

Armand Limare, Rambouillet, and Francois Maillot, Versailles, both of France, assignors to Societe Metallurgique le Nickel S. L. N., Paris, France

Filed Jan. 9, 1980, Ser. No. 110,683

Claims priority, application France, Jan. 9, 1979, 79 00380

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—96 **15 Claims**

1. A method for producing hydroxylated nickel compounds from a solution of nickelous ions comprising the steps of:

(a) electrolyzing a solution of nickelous ions while maintaining the catholyte at a pH of from about 1 to 6 and at a temperature of less than about 50° C., whereby a precipitate is formed in the solution; and

(b) recovering the precipitate from the solution.

4,265,719

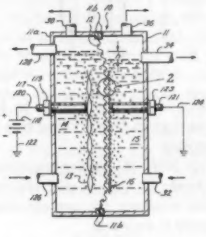
ELECTROLYSIS OF AQUEOUS SOLUTIONS OF ALKALI-METAL HALIDES EMPLOYING A FLEXIBLE POLYMERIC HYDRAULICALLY-IMPERMEABLE MEMBRANE DISPOSED AGAINST A ROUGHENED SURFACE CATHODE

Bobby R. Ezzell, Lake Jackson; Jacquelyn M. Malone, Houston, and Marius W. Sorenson, Lake Jackson, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 26, 1980, Ser. No. 134,244

Int. Cl.³ C25B *1/34, 9/00, 11/03*

U.S. Cl. 204—98 **17 Claims**



17. In the method of operating an electrolysis cell in which there is a catholyte compartment containing a vertical foraminous cathode and a volume of catholyte, in which there is an anolyte compartment containing a vertical anode and a volume of anolyte, in which there is a non-rigid, polymeric plastic, substantially hydraullically impermeable ion exchange membrane film separating the anolyte and catholyte compartments and being disposed between the anode and cathode which themselves are spaced from one another, the improvement which comprises:

maintaining a higher pressure in the anolyte chamber than in the catholyte chamber so that the membrane is pushed toward the cathode, the surface of said cathode which faces the membrane in addition to being foraminous having protuberances and indentations on and in it so as to present a non-flat surface to the membrane.

4,265,720

STORAGE MATERIAL FOR HYDROGEN

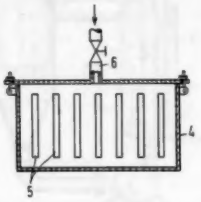
Guenter Winstel, Ottobrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,590

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855413

Int. Cl.³ C25B *1/02, 9/00*

U.S. Cl. 204—129 **18 Claims**



6. A method of storing hydrogen in a material which absorbs atomic hydrogen, comprising:

providing a fluidic hydrogen-containing medium in a confined space;

positioning a storage body comprised of a silicon material in contact with said medium; and

generating atomic hydrogen from said medium by passing electrical energy through said medium whereby atomic hydrogen is generated and contacts said storage body and is absorbed therein for storage.

4,265,721

COMMERCIAL HYDROGEN GAS PRODUCTION BY ELECTROLYSIS OF WATER WHILE BEING SUBJECTED TO MICROWAVE ENERGY

Saul A. Hackmyer, 2335 N.E. 172nd St., North Miami Beach, Fla. 33160

Filed May 5, 1980, Ser. No. 147,060

Int. Cl.³ C25B *1/04*

U.S. Cl. 204—129 **2 Claims**

1. The method of commercially producing hydrogen and oxygen gases electrolytically from an aqueous electrolyte which comprises, placing an electrolytic cell within a resonant chamber, then feeding resonating microwave energy to said resonant chamber for subjecting the molecules of the electrolyte to vibration at the microwave energy frequency, and then collecting the hydrogen and oxygen gasses released at the two poles of the electrolytic cell.

4,265,722

METHOD OF PROCESSING THE SURFACE OF WORKPIECES INCLUDING PARTICULARLY THE ETCHING OF SURFACES CONTAINING COPPER OR COPPER ALLOYS

Wolfgang Faul; Leander Fürst, both of Jülich, and Bertel Kastening, Hamburg, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,137

Claims priority, application Fed. Rep. of Germany, Nov. 22, 1978, 2850542

Int. Cl.³ C25F *3/14, 5/00*

U.S. Cl. 204—129.6 **6 Claims**

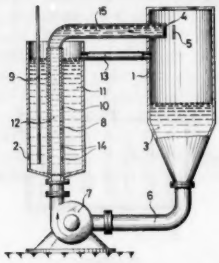
1. A method of electrochemically processing metallic surfaces of workpieces including particularly etching of copper and copper alloy, in an electrolysis cell having an anode in a compartment thereof and a cathode comprising in combination the steps of:

providing in said electrolysis cell an acidic solution contain-

ing ferric sulfate as an oxidizing agent at a concentration of maximally 140 g Fe/l etching solution, and also containing at least 10 g Cu/l etching solution;

maintaining said solution free of chloride ions and at a current density of at least $2A/dm^2$ in said electrolysis cell;

processing a workpiece by etching a metal surface with said solution so that copper is removed therefrom, resulting in a used etching solution;



passing said used etching solution through said electrolysis cell again to regenerate used etching solution including the oxidizing agent thereof; and

depositing copper on said cathode of said electrolysis cell, suspending in said etching solution electrically conductive carbon particles added for transfer of electrical charge onto a pertaining surface to be processed for the purpose of regeneration of said used etching solution; and periodically charging suspended carbon particles at said anode of said electrolysis cell.

4,265,723

PHOTOCURABLE MOLDING, IMPREGNATING AND COATING COMPOSITIONS

Anton Hesse, Luetzelsachsen; Peter Lechtken, Frankenthal; Walter Nicolaus, Ludwigshafen, and Dankmar Scholz, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 6, 1979, Ser. No. 55,359

Int. Cl.[3] **C08F** *2/50*

U.S. Cl. 204—159.23 **7 Claims**

1. A photocurable molding, impregnating and coating composition comprising a mixture of

(a) or more ethylenically unsaturated polyesters or vinyl ester resins having the characteristic group $—CO—OCH_2CHOH—CH_2O—$,

(b) one or more etnylenically unsaturated copolymerizable monomeric compounds,

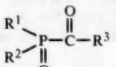
(c) an inhibitor and

(d) an UV sensitizer,

with or without

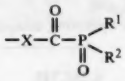
(e) paraffins, thermally decomposable initiators, fillers, reinforcing agents, lubricants, inert solvents, shrinkage-reducing additives and other assistants usable in unsaturated polyesters,

wherein the UV sensitizer consists of one or more acylphosphine oxide compounds of the formula



(I)

where R^1 is straight-chain or branched alkyl of 1 to 6 carbon atoms, cyclohexyl, cyclopentyl, aryl which is unsubstituted or substituted by halogen, alkyl or alkoxy, or a S-containing or N-containing five-membered or six-membered heterocyclic radical, R^2 has one of the meanings of R^1 (but R^1 and R^2 may be identical or different), or is alkoxy of 1 to 6 carbon atoms, aryloxy or aralkoxy, or R^1 or R^2 together stand for an o-phenylene-dioxy group, and R^3 is a substituted or unsubstituted straight-chain or branched alkyl of 2 to 18 carbon atoms, a cycloaliphatic radical of 3 to 10 carbon atoms, vinyl, phenyl, naphthyl or a S-, O- or N-containing five-membered or six-membered heterocyclic radical or is the group



where R^1 and R^2 have the above meanings and X is phenylene or an aliphatic or cycloaliphatic divalent radical of 2 to 6 carbon atoms.

4,265,724

ELECTROCHEMICAL SENSOR, PARTICULARLY OXYGEN SENSOR TO DETERMINE EXHAUST GAS COMPOSITION FROM AUTOMOTIVE INTERNAL COMBUSTION ENGINES

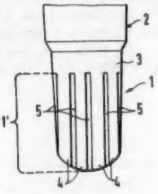
Wolf-Dieter Haecker, Asperg; Karl-Hermann Friese, Leonberg, and Bernhard Topp, Gerlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 54,784

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830778

Int. Cl.[3] **G01N** *27/58*

U.S. Cl. 204—195 S **6 Claims**



1. Electrochemical sensor, particularly to determine oxygen content in the exhaust gases from automotive internal combustion engines comprising

a solid electrolyte body **(1)** having a sensing portion **(1')**;

a thin-film electrode **(3, 3')** on said electrolyte body of a material which catalyzes the gas equilibrium of gases to which the sensor is exposed;

and a porous cover layer **(6)**

wherein, in accordance with the invention,

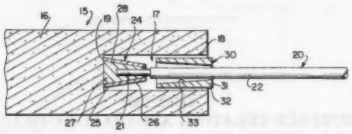
the thin-film electrode **(3, 4)** consists of a material consisting of at least one: platinum; platinum alloy; platinum-rhodium and is located on and in direct contact with the solid electrolyte body **(1)** in form of partial, spacially interrupted and electrically interconnected covering portions thereon, leaving gaps **(3)** between the direct contact of said covering portions of thin-film electrode and on the solid electrolyte body **(1)**; and

the porous cover layer **(6)** comprises at leasat one: a ceramic oxide; a mixture of several ceramic oxides and covers the entire sensing portion including the thin-film electrode material, and the solid electrolyte body in the region of the gaps **(5)** between the electrodes, to provide for direct contact of the porous cover layer **(6)** with the solid electrolyte body **(1)**.

4,265,725
ANODE CONNECTION

Joe F. Tatum, Hattiesburg, Miss., assignor to C. E. Equipment Co., Inc., Hattiesburg, Miss.

Filed Jul. 20, 1979, Ser. No. 59,348
Int. Cl.³ C23F *13/00*; H01R *43/00*
U.S. Cl. 204—196 **6 Claims**



1. The combination of an anode and a connector for securing an electrical conductor to such anode comprising an elongated anode having a generally cylindrical bore therein of predetermined diameter, a connector for securing an electrical conductor within said bore including a first member of electrically conductive material carried within said bore of said anode, the outer wall of said first member being generally frusto-conical and having a major diameter which is less than said predetermined diameter of said bore of said anode, a second member of electrically conductive material carried within said bore and disposed around said outer wall of said first member of said connector, said second member having a generally cylindrical outer wall of a diameter less than said predetermined diameter of said bore of said anode and a generally frusto-conical inner wall, said frusto-conical inner wall of said second member having substantially the same angle of taper as the frusto-conical outer wall of said first member, said frusto-conical inner wall of said second member being in generally axially aligned relationship with the frusto-conical wall of said first member, means for connecting the electrical conductor to one of said first and second members, and said frusto-conical wall of said first member being engaged with said frusto-conical wall of said second member and causing said outer wall of said second member to expand into intimate engagement with the wall of the bore of the anode to form a low resistance electrical connection between the conductor and the anode.

5. The method of connecting an electrical conductor to an anode of a cathodic protection system comprising the steps of forming a bore in the body of said anode, electrically connecting said conductor to an electrically conductive male member having a generally frusto-conical outer wall, placing said male member within said bore, forcing a hollow electrically conductive female member having a generally frusto-conical inner wall and a generally cylindrical outer wall onto said frusto-conical outer wall of said male member to cause said female member to expand until said generally cylindrical wall of said female member intimately engages the wall of said bore and forms a low resistance connection therewith.

4,265,726
ALUMINUM PLATING CELL

Gunther Herrnring, Alvesloe, and Klaus P. Nussen, Hamburg, both of Fed. Rep. of Germany, assignors to Montblanc-Simplo GmbH, Hamburg, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 110,106
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1979, 2901586
Int. Cl.³ C25D *17/28, 21/00*; C25C *1/02, 3/06*
U.S. Cl. 204—202 **6 Claims**

1. An aluminum electroplating cell of the type comprising an electroplating vessel adapted to contain liquid electrolyte up to an electrolyte level and lock means through which workpieces pass in moving into and out of said vessel and by which electrolyte in said vessel is substantially shielded from oxygen and moisture, said electroplating cell being characterized by:

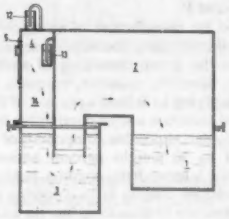
A. said lock means comprising

(1) a liquid lock chamber that is spaced from said vessel and adapted to hold aprotic solvent up to a predetermined level,

(2) means defining an inverted-U-shaped passage which

(a) at one of its ends opens to said liquid lock chamber at a level below said predetermined level and

(b) at its other end opens to said vessel at a level about said electrolyte level, and



(3) means for maintaining inert gas in said passage at an above-atmospheric pressure; and

B. means defining an antechamber that has a sealable door and which can be charged with inert gas at an above atmospheric pressure, said antechamber opening downwardly to said liquid lock chamber to be communicated therewith at a level above said predetermined level.

4,265,727
COMPOSITE ELECTRODES

Don A. Beckley, Newport Beach, Calif., assignor to Hitco, Irvine, Calif.

Filed Oct. 22, 1979, Ser. No. 87,206
Int. Cl.³ C25B *9/00, 11/12, 11/02*
U.S. Cl. 204—242 **20 Claims**

16. An electrolytic cell comprising in combination:

walls defining a housing having a compartment for receiving a body of electrolyte,

an anode electrode within the housing having a front face in a communication with the compartment and having a rear face,

a cathode electrode within the housing having a front face in a communication with the compartment and having a rear face,

contact means for connection to the rear faces of said electrodes, and

at least one of said electrodes comprising a composite of a uniform dispersion of randomly distributed graphite fibers having a diameter from 1 to 30 micron and a length no more than ½ the thickness of the electrode dispersed in a cured, oxidation and chemical resistant, continuous, matrix resin containing a dispersion of fine, particulate conductive filler having a diameter less than the diameter of the fibers and selected from carbon or graphite.

4,265,728

METHOD AND ELECTRODE WITH MANGANESE DIOXIDE COATING

Mary R. Suchanski, and Jeries I. Bishara, both of Mentor, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Nov. 3, 1978, Ser. No. 957,474

The portion of the term of this patent subsequent to Jun. 7, 1994, has been disclaimed.

Int. Cl.[3] C25B *11/16;* B05D *5/12*

U.S. Cl. 204—290 F 10 Claims

1. A method for manufacture of an electrode for use in an electrolytic cell comprising the steps of: selecting a valve metal substrate from the group consisting of aluminum, molybdenum, niobium, tantalum, titanium, tungsten, zirconium or alloys thereof; applying to at least a portion of the surface area of the valve metal substrate a semi-conductive intermediate coating of thermally decomposable compounds of tin and antimony containing 0.1 to 30 weight percent antimony, drying the semi-conductive intermediate coating; baking the semi-conductive intermediate coating in an oxidizing atmosphere at an elevated temperature to transform the tin and antimony compounds to their respective oxides; and applying to the surface of the semi-conductive intermediate coating a coating of thermally decomposable compounds of manganese, drying the top coating and baking the top coating in an oxidizing atmosphere at a temperature in the range of 380° to 420° C. to its oxide form.

10. An electrode for use in an electrolytic cell comprising: a solid titanium substrate; on at least a portion of the surface of said substrate, a semiconductive intermediate coating consisting of oxides of tin and antimony containing 0.1 to 30 weight percent antimony, in an amount greater than 2 grams per square meter of said substrate surface area; and on the surface of said semiconductive intermediate coating, an electrocatalytically active top coating consisting of an oxide of manganese electroplated thereon and converted to beta MnO_2 structure by baking in an oxidizing atmosphere having a temperature in the range of 380° to 420° C. to attain an amount greater than 300 grams per square meter.

4,265,729

MAGNETICALLY ENHANCED SPUTTERING DEVICE

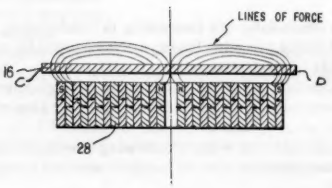
Charles F. Morrison, Jr., Boulder, Colo., assignor to Vac-Tec Systems, Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 946,370, Sep. 27, 1978, Pat. No. 4,180,450, which is a continuation-in-part of Ser. No. 935,358, Aug. 21, 1978, Pat. No. 4,162,954. This application Mar. 9, 1979, Ser. No. 19,284

The portion of the term of this patent subsequent to Jul. 31, 1996, has been disclaimed.

Int. Cl.[3] C23C *15/00*

U.S. Cl. 204—298 78 Claims



1. A magnetically enhanced sputtering device comprising:

a cathode, at least a portion of which is provided with a planar sputtering surface;

an anode spaced from said cathode for establishing a discharge current therebetween; and

permanent magnet means for establishing a closed loop magnetic field where at least some of the lines of force of the field extend parallel to and over said planar sputtering surface, said permanent magnet means further establishing a closed plasma loop path over said planar sputtering surface thereby providing a Hall effect current which circulates around the closed plasma loop path, said permanent magnet means including means for causing the magnitude of the circulating current to be at least approximately five times as great as that of said discharge current.

4,265,730

SURFACE TREATING APPARATUS UTILIZING PLASMA GENERATED BY MICROWAVE DISCHARGE

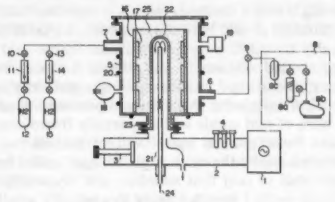
Masahiko Hirose, and Yoshimi Akai, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki K.K., Kawasaki, Japan

Filed Mar. 27, 1980, Ser. No. 134,502

Claims priority, application Japan, Mar. 30, 1979, 54/38215

Int. Cl.[3] C23C *15/00;* B01J *19/00*

U.S. Cl. 204—298 10 Claims



1. An apparatus for treating the surface of a material within a gas plasma generated by microwave discharge, comprising:

a microwave generator;

a waveguide for transmitting the microwaves generated from the microwave generator;

a closed vessel adapted to house at least one workpiece to be treated;

means for introducing a gas into the closed vessel;

means for withdrawing the gas from the closed vessel;

an antenna means inserted at least partially into the closed vessel, said antenna means serving to pick up the microwave from the waveguide and to deliver said microwave into the closed vessel for producing a gas plasma; and

a cylindrical body formed of a microwave-transmitting material, mounted to the closed vessel in an air-tight fashion, and surrounding the antenna means at the portion inserted into the closed vessel.

4,265,731

SEPARATION AND PROCESSING OF CRUDE OIL

Norris W. Mitchell, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 8, 1980, Ser. No. 110,304

Int. Cl.[3] B01D *3/10;* C10G *51/06, 67/00*

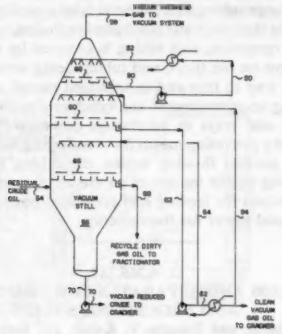
U.S. Cl. 208—80 50 Claims

1. A method for separating a residual crude oil into a light oil fraction and a heavy oil fraction, comprising:

(a) separating said residual crude oil into a first light oil fraction and a first heavy oil fraction in a first separation step;

(b) separating said first heavy oil fraction into a second light

oil fraction, an intermediate oil fraction and a second heavy oil fraction in a second separation step; and



(c) recycling said intermediate oil fraction to said first separation step (a).

4,265,732

PROCESS AND APPARATUS FOR ENDOTHERMIC REACTIONS

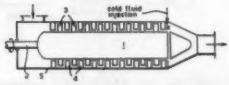
Mircea Dinulescu, Gouda, Netherlands, assignor to Kinetics Technology Intl. B.V., Zoetermeer, Netherlands

Filed Jul. 3, 1978, Ser. No. 922,168

Claims priority, application United Kingdom, Jul. 5, 1977, 28049/77

Int. Cl.³ C10G *9/00, 15/00*

U.S. Cl. 208—106 **11 Claims**



1. A process for cracking hydrocarbons which comprises passing a preheated gaseous phase containing hydrocarbons into an axial type reactor having internal rotating blades, utilizing mechanical energy in the form of work performed by said rotating blades on said gaseous phase to provide heat for cracking said hydrocarbons, followed by rapidly cooling said gaseous phase containing cracked hydrocarbons.

4,265,733

DE-ASHING LUBRICATING OILS

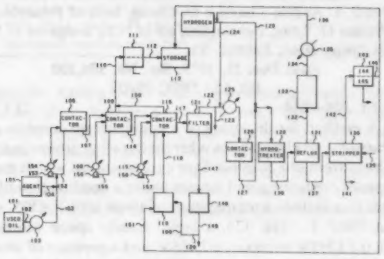
Donald C. Tabler, and Bobby G. Gray, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 1, 1979, Ser. No. 90,183

Int. Cl.³ C10M *11/00*

U.S. Cl. 208—179 **8 Claims**

1. In a process for reducing the concentration of ash-forming components in a used lubricating oil wherein a feedstream comprising said lubricating oil and an aqueous ammonium salt treating agent is continuously passed into a first reaction zone wherein said treating agent reacts with ash-forming components in said oil and an effluent is continuously withdrawn from said first reaction zone and subjected to filtration after removal of water therefrom, the improvement comprising introducing said feedstream into said first reaction zone by



passing said feedstream through a centrifugal pump along with portions of the contents of said first reaction zone.

4,265,734

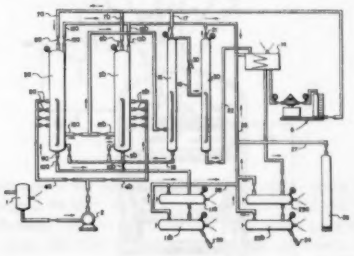
METHOD FOR REGENERATION OF USED LUBRICANT OILS

Lech G. Wielezynski, "Le Bocage", St. Pierre es Champs 60850 St. Germer de Fly, France

Filed Nov. 1, 1979, Ser. No. 90,465

Int. Cl.³ C10M *11/00*

U.S. Cl. 208—180 **7 Claims**



1. A process for regenerating polluted lubricating oil comprising:

charging a reservoir with propane;

injecting polluted lubricating oil into the propane in said reservoir to intimately contact the oil with the propane;

holding the charged propane and injected oil in said reservoir for a time sufficient to permit the oil to dissolve into said propane to form an oil-propane mixture and to permit propane-insoluble impurities to precipitate in said reservoir;

after elapse of said sufficient time, withdrawing said oil-propane mixture from said reservoir, and delivering it into a purifying column;

introducing propane into said purifying column in countercurrent flow to said oil-propane mixture to further purify the oil in said mixture;

flowing said oil-propane mixture out of said column and through separating means to separate the propane from the oil by addition of heat;

recovering the separated oil;

recycling the separated propane to said column and to said reservoir; and

removing said propane-insoluble precipitated impurities from said reservoir.

4,265,735

ZSM-5 ZEOLITE CATALYZES DIALKYL DISULFIDE CONVERSION TO HYDROGEN SULFIDE

Costandi A. Audeh; Clarence D. Chang, both of Princeton, and William H. Lang, Pennington, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 21, 1979, Ser. No. 106,320
Int. Cl.[3] C07C *19/00*
U.S. Cl. 208—234 **11 Claims**

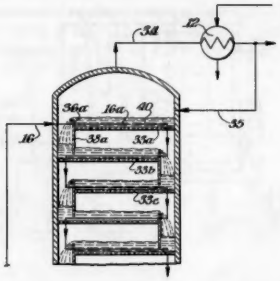
1. A method for disposing of a liquid stream consisting of a mixture of dialkyl disulfides wherein the alkyl groups individually have from one to about four carbon atoms, which method comprises contacting said stream under a combination of conditions that include a temperature of about 600° F. (305° C.) to about 1000° F. (538° C.), a liquid hourly space velocity of about 0.2 LHSV to about 20 LHSV, and a pressure of about 15 psig to 300 psig, with a crystalline zeolite catalyst having a silica to alumina ratio of at least 12 and a Constraint Index of 1 to 12, said combination of conditions being effective to convert said dialkyl disulfides to hydrogen sulfide and a mixture of hydrocarbons.

4,265,736

PROCESS AND APPARATUS FOR REDUCING THE ENERGY REQUIRED TO SEPARATE LIQUIDS BY DISTILLATION

Victor R. Thayer, 1251 Corner Ketch Rd., Newark, Del. 19711

Continuation-in-part of Ser. No. 960,577, Nov. 14, 1978, abandoned. This application Oct. 9, 1979, Ser. No. 82,990
Int. Cl.[3] B01D *3/00*; C10G *7/00*
U.S. Cl. 208—353 **3 Claims**



1. A method for reducing the amount of heat required to separate components of a liquid petroleum feed mixture, said components having different boiling points, in continuous fractional distillation, comprising preheating a portion of said feed mixture by passing it through heat exchange tubing located on at least a portion of the trays in a fractionating tower and positioned so that, when said tower is in operation, said tubes are covered by liquid in a state of agitation on said trays, said tubes being connected so as to carry said portion of said mixture over said trays downwardly in succession, and then feeding said portion of said feed mixture into said tower, fractionating said feed in said tower, and recovering overhead and bottoms products therefrom.

3. Apparatus for fractional distillation of petroleum comprising:

a fractionating tower having a multiplicity of horizontal trays spaced at suitable vertical intervals within said tower for effecting countercurrent contact between vapor passing upward through the trays and liquid passing downward through the trays,

feed and outlet means for introducing feed mixtures and withdrawing overhead and bottoms products, respectively,

necessary auxiliaries as required for fractional distillation including piping and heater means, and

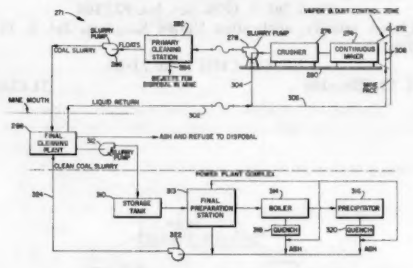
at least one internal heat exchange circuit comprising heat exchange tubing located on at least a portion of said trays within the tower and positioned such that, when the tower is in operation, said tubing is covered by agitated liquid present on the trays, said tubing being serially connected from tray to tray and to said feed means, and associated piping so as to receive and conduct a portion of the feed over said trays in succession downwardly, the tubing thereby providing means for transferring heat between the feed portion flowing within the tubing and the liquid flowing within the tower on the trays outside the tubing, and means for feeding said preheated portion of said feed into said tower for fractionation.

4,265,737

METHODS AND APPARATUS FOR TRANSPORTING AND PROCESSING SOLIDS

Clay D. Smith, and Douglas V. Keller, Jr., both of Lafayette, N.Y., assignors to Otisca Industries, Ltd., Syracuse, N.Y.

Continuation of Ser. No. 929,803, Jul. 31, 1978, abandoned, which is a division of Ser. No. 561,168, Mar. 24, 1975, Pat. No. 4,173,530, which is a continuation-in-part of Ser. No. 423,577, Jan. 14, 1974, abandoned. This application Apr. 23, 1980, Ser. No. 143,160
Int. Cl.[3] B03B *5/30, 5/44*
U.S. Cl. 209—3 **9 Claims**



4. A coal handling and processing system which includes: means for forming a liquid slurry of coal to be cleaned, pumping means for effecting a flow of said slurry to a cleaning station, separator means at said cleaning station for effecting a gravity separation of the coal by a heavy liquid, and means for transporting the separated coal in slurry with said heavy liquid to a terminus.

4,265,738

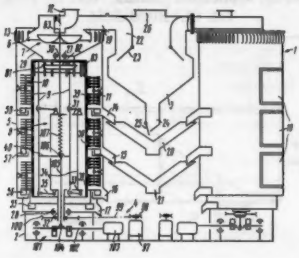
CLEANING AND/OR GRADING MACHINE FOR FREE-FLOWING MATERIALS

Evgeny S. Goncharov, ulitsa Lomonosova, 30/1, kv. 46; Anatoly N. Prilutsky, ulitsa Entuziastov, 29/2, kv. 36, both of Kiev, and Viktor I. Shevchuk, ulitsa Vokzalnaya, 23, kv. 33, Kievskaya oblast, Vasilkovsky raion, poselok Glevakha, all of U.S.S.R.

Filed Oct. 25, 1979, Ser. No. 87,830
Int. Cl.[3] B07B *9/00*
U.S. Cl. 209—31 **10 Claims**

1. A separating machine for free-flowing materials comprising at least one separating unit; a frame on which said unit is mounted; an aspirating chamber connected with the outlet of said unit; said unit comprising a hollow housing; a feeding means located in the upper part of said housing; a first distributor for the free-flowing material located below said feeding means inside of said hollow housing; an air separating zone formed by said hollow housing and said first distributor; a rotor installed in said housing; a screening drum mounted on

said rotor with provision for movement relative thereto; a second distributor of the free-flowing material in the upper part of said screening drum mounted on said rotor; said screening drum comprising a plurality of sections, each section comprising a screen in the form of a body of revolution; supporting

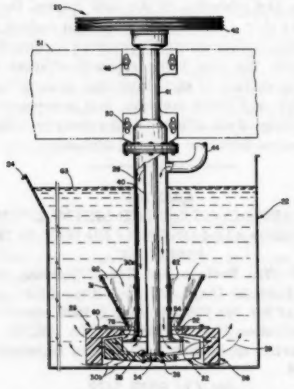


rings on which said screen is mounted; tie rods extending through said supporting rings of all said sections to connect them to one another; hole cleaners for said screen installed at the external side of said drum; a drive means mounted on said frame connected to said screening drum for simultaneously rotating and vibrating said screening drum.

4,265,739
FLOTATION MACHINES AND COMPONENTS THEREOF

Robert W. Dalton, 7530 E. Calle Agerrida, Tucson, Ariz. 85715

Continuation of Ser. No. 5,816, Jan. 23, 1979, abandoned, which is a continuation of Ser. No. 789,442, Apr. 20, 1977, abandoned. This application Jan. 18, 1980, Ser. No. 113,294
Int. Cl.[3] B03D *1/16*
U.S. Cl. 209—169 **2 Claims**



1. A froth flotation machine of the subaeration type which comprises: a tank; an impeller rotatably supported in the bottom of said tank; and means for rotating said impeller; said impeller being fabricated without an internal supporting skeleton component from a non-metallic, abrasion and corrosion resistant, elastomeric material which has the following characteristics:

Minimum tensile strength	2000 psi
Minimum tear strength	125 PLI
Minimum modulus of elasticity at 100% elongation	400
Maximum percent elongation	600

-continued

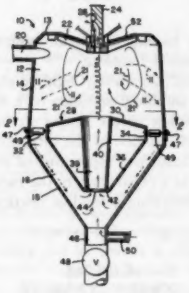
Minimum durometer (Shore A)	40
Abrasion resistance (maximum 1055, Tabor index, H-18 wheel)	100
Maximum percent resilience	50;

said impeller having a hub which is symmetrical with the axis of rotation of the impeller and has its major dimension extending at right angles to said axis, said impeller further including elongated, rectilinear blades integrated at one end only with said hub and extending from said hub along paths parallel to said axis of rotation, and said blades being located at the periphery of the impeller at equidistantly spaced intervals thereabout.

4,265,740
CENTRIFUGAL SEPARATOR

Oscar Luthi, Nashua, N.H., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Dec. 17, 1979, Ser. No. 104,541
Int. Cl.[3] B04C *5/103*
U.S. Cl. 209—211 **5 Claims**



1. A separator for removing impurities from a pulp slurry comprising: a vertical vessel having an upper chamber and a lower chamber; means for feeding a pulp slurry tangentially into the upper chamber to impart a rotational movement to the pulp slurry to cause the impurities to move outwardly; a recirculation conduit coaxially mounted in the vessel; means for changing the rotational movement of the pulp slurry in the upper chamber into a primarily translational movement downwardly within the lower chamber so that impurities move downwardly within the lower chamber; an elutriation water inlet located to flow elutriation water into the lower chamber to wash pulp fibers from the impurities and flow the pulp slurry, free of impurities, upwardly with the recirculation conduit and into the upper chamber; and means for removing the impurities from the lower chamber.

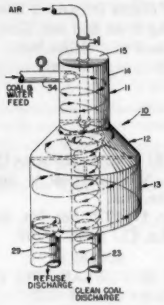
4,265,741
APPARATUS AND METHOD FOR SEPARATING DIVERSE PARTICLES OF A SLURRY

Chang J. Im, Rte. 6, Box 30, Abingdon, Va. 24210

Filed May 15, 1980, Ser. No. 149,990
Int. Cl.[3] B04C *5/081, 5/107*
U.S. Cl. 209—211 **30 Claims**

1. An apparatus for separating lightweight particles from heavyweight and middling particles of a slurry comprising means defining an upper cylindrical chamber, means defining a frusto-conical chamber communicating at an upper end thereof with a lower end of said upper cylindrical chamber, means for tangentially injecting said slurry into an upper end of said upper cylindrical chamber to create a swirling vortex of said

slurry descending through said upper cylindrical chamber and said frusto-conical chamber, providing an axially disposed, low pressure zone, means for discharging an overflow of said slurry containing said lightweight particles, said overflow discharging means including an intake orifice disposed in communication with said low pressure zone in said frusto-conical chamber and means for discharging an underflow of said slurry containing said heavyweight and middling particles, said underflow



discharging means having an intake orifice communicating with said frusto-conical chamber.

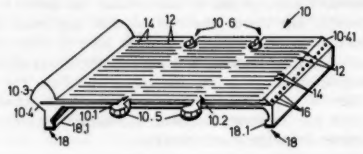
26. A method of separating lightweight particles from heavyweight and middling particles of a slurry comprising producing a descending vortex having a constant radius for a predetermined axial distance in the direction of flow and an increasing radius thereafter, aspirating an inner zone of said descending vortex at a region where the radius of said vortex increases, and withdrawing a residual portion of said slurry.

4,265,742

SCREEN ELEMENT

Fritz O. Bücker, Pretoria, and Henning F. W. M. A. Lambrecht, Johannesburg, both of South Africa, assignors to Hermann Screens Manufacturing Company (Proprietary) Limited, Edenvale, South Africa

Filed Jun. 25, 1979, Ser. No. 51,442
Int. Cl.³ B07B *1/46*
U.S. Cl. 209—399 **19 Claims**



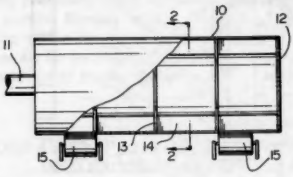
1. A replaceable plastic or elastomeric screen element having an apertured body portion extending between two opposite sides and two opposite ends, each side including a continuous elongate protruding fastening means extending along substantially the entire length of the side for fastening the screen element along each side to a screen support member, each fastening means being adapted to form, with a corresponding fastening means of an adjoining similar screen element, a matching combined pair when two screen elements are fitted closely together in edge-to-edge relationship, the pair being adapted to be brought into releasable substantially unyielding positive engagement with a complementary elongate fastening recess of the screen support member.

4,265,743

METHOD OF AND APPARATUS FOR EXTRACTION OF GOLD FROM PLACER GRAVEL

Earl G. Younge, c/o P.O. Box 3156, No. 204 - 20559 Fraser Hwy., Langley, British Columbia, Canada (V3A 4R5)

Filed Jun. 20, 1979, Ser. No. 50,310
Claims priority, application Canada, Nov. 23, 1978, 316785
Int. Cl.³ B03B *5/56*
U.S. Cl. 209—452 **1 Claim**



1. In a method of extracting precious metal from a precious metal bearing ore deposit, the improvement comprising the steps of:

providing a rotatably mounted cylindrical drum having a substantially horizontally disposed axis, said drum having an input end, an output end, and an internal peripheral surface, said input end being substantially closed about an opening adapted for flowing a slurry of precious metal ore into said drum, the internal peripheral surface of said drum having a plurality of spaced annular riffles of predetermined height, and at the output end having a plurality of longitudinally circumferentially spaced riffles of a height less than said annular riffles,

flowing a slurry of precious metal bearing ore through said opening in said input end at a predetermined flow rate while

simultaneously rotating said drum at a predetermined speed about its axis whereby, as the tank rotates, the slurry is caused to flow continuously in helical fashion over the longitudinal and annular riffles causing settling of precious metal fines, the fines being retained adjacent the inner peripheral surface of said drum due to centrifugal force caused by said drum rotation, and non-precious metal bearing material not affected by the same centrifugal force being flushed from the outlet of said drum.

4,265,744

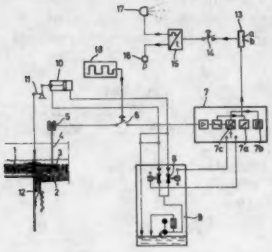
DISCHARGE-CONTROLLED METHOD FOR A COMPRESSED AIR-CONTROLLED WET SETTLING MACHINE

Karl-Heinz Weiffen, Bochum, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation of Ser. No. 930,390, Aug. 2, 1978, abandoned. This application Mar. 3, 1980, Ser. No. 126,219
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 2734736
Int. Cl.³ B03B *5/22*
U.S. Cl. 209—457 **8 Claims**

1. In a discharge control method for controlling a compressed air-controlled settling machine for the preparation of mineral mixtures, in particular the washing of raw coal, in which air inlet and outlet valves are cyclically operated during respective spaced time intervals to introduce and exhaust air from a work chamber in which the mixture is carried on a perforate settling machine carrier to sinusoidally pulsate a separating liquid in the chamber and stratify the mixture into at least heavy and lighter layers of material, and in which a scanner senses the level of the heavy layer and controls a discharge device for controlling the discharge of the heavier layer in accordance with an actual-reference regulation control, the improvement comprising the step of: scanning the heavy layer

level and feeding an actual value to the regulation control during a measuring time interval which is asymmetrically time



positioned with respect to the maximum density rest time of the material.

4,265,745

PERMSELECTIVE MEMBRANE

Takeyuki Kawaguchi; Yutaka Taketani; Yuzuru Hayashi; Tomoyoshi Ono, and Koh Mori, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 18, 1978, Ser. No. 907,194

Claims priority, application Japan, May 25, 1977, 52/59930; May 27, 1977, 52/60944; Sep. 13, 1977, 52/109401

Int. Cl.³ B01D *13/00*

U.S. Cl. 210—654 **43 Claims**

1. A permselective membrane having high water flux and perselectivity comprising a thin permselective film of a polymeric material, said polymeric material being prepared by cross-linking a polyaddition product between a polyepoxy compound and a polyamino compound having at least two amino groups capable of reacting with epoxy groups with a polyfunctional compound selected from the group consisting of aromatic, heterocyclic and alicyclic compounds containing at least two functional groups selected from acid halide, sulfonyl halide, isocyanate and acid anhydride groups.

42. In a method for desalination of saline or brackish water by reverse osmosis comprising contacting the saline or brackish water under pressure with a reverse osmosis membrane, the improvement wherein the membrane of claim **1** is used as the reverse osmosis membrane.

4,265,746

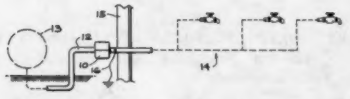
WATER TREATING APPARATUS AND METHODS

George M. Zimmerman, Sr., San Gabriel, and Herman E. Menold, Santa Fe Springs, both of Calif., assignors to Bon Aqua, Inc., Rancho, Calif.

Continuation of Ser. No. 859,831, Dec. 12, 1977, abandoned. This application Jul. 30, 1979, Ser. No. 61,930

Int. Cl.³ B01D *35/06*

U.S. Cl. 210—695 **29 Claims**



14. The method of treating water which comprises:

passing fresh water through a fluid conduit having an electrically conductive portion connected electrically to earth; and

subjecting the water to a magnetic field having north and south poles spaced apart in the direction of water flow, said magnetic field being oriented to have its overall effective south magnetic polarity located upstream of its overall effective north magnetic polarity.

4,265,747

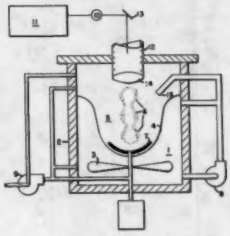
DISINFECTION AND PURIFICATION OF FLUIDS USING FOCUSED LASER RADIATION

William M. Copa, Wausau, and Wayne B. Gitchel, Rothschild, both of Wis., assignors to Sterling Drug Inc., New York, N.Y.

Filed May 22, 1979, Ser. No. 41,526

Int. Cl.³ C02F *1/32, 1/78*

U.S. Cl. 210—758 **17 Claims**



1. A process for disinfecting an aqueous fluid contaminated with microorganisms, which comprises contacting said fluid with a gas selected from the group consisting of oxygen, nitrogen, argon, helium, neon, carbon dioxide, and a mixture of two or more of said gases in which a continuous plasma is generated by multiple pulses of focused laser radiation said plasma containing ultraviolet light, ions, X-ray, electrons and neutrons, and rapidly transferring said plasma to said aqueous fluid for a time sufficient to disinfect said aqueous fluid.

9. A process for reducing the chemical oxygen demand of a wastewater, which comprises contacting said wastewater with an oxygen-containing gas in which a continuous plasma is generated by multiple pulses of focused laser radiation said plasma containing ultraviolet light, ions, x-ray, electrons, neutrons, and ozone, and rapidly transferring said plasma to said waste-water for a time sufficient to reduce said chemical oxygen demand.

4,265,748

LUBRICANT FILTER FOR INTERNAL COMBUSTION ENGINES

Franco Villani, and Antonina Marciante, both of Turin, Italy, assignors to Tecnocar S p A, Grugliasco, Italy

Filed May 8, 1980, Ser. No. 147,843

Claims priority, application Italy, Jan. 11, 1980, 67035 A/80

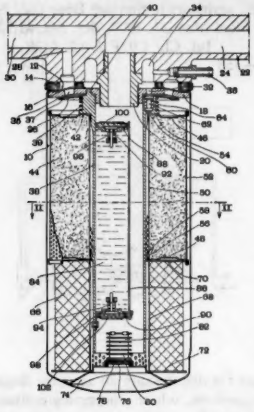
Int. Cl.³ B01D *35/00*

U.S. Cl. 210—132 **14 Claims**

1. A lubricant filter of the type to be screwed on, for internal combustion engines, particularly for motor vehicles, comprising a cup-shaped member containing a first cylindrical crown-shaped filter cartridge closed upwardly by a cover having an eccentric inlet opening for the lubricant and an axial outlet opening for the filtered lubricant, said cup-shaped member being provided with a container for a mixture of liquid additives, having a wall subjected to the flow of lubricant through the filter and an opening closed by a diaphragm made of a material adapted to dissolve slowly under the action of the hot lubricant, said valve being biassed in the open position by a spring mounted in said opening and the diaphragm arranged to prevent the opening of the valve.

9. A lubricant filter as claimed in claim **1**, wherein said first filter cartridge extends substantially from the cover of said cup-shaped member over only a portion of the height thereof and arranged between said first filter cartridge and the bottom of said cup-shaped member is a second cylindrical crown-shaped filter cartridge, a tubular member is secured to said

cover and extends axially substantially over the entire length of said cup-shaped member and the gap between the inner surface of said first filter cartridge and the outer surface of said tubular member is closed by a sealing gasket toward the bottom of said cup-shaped member and communicates with the inside of the engine through an outlet opening located eccentrically in said cover between said inlet opening and the centre of said cover.



13. A lubricant filter as claimed in claim 9, wherein said outlet opening located eccentrically in said cover is provided with a valve controlled by a spring acting against the flow of the lubricant and dimensioned to permit opening of the valve only when a predetermined pressure is exceeded.

4,265,749

CHAMBER FILTER PRESS

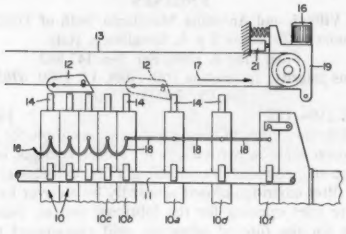
Oswald Busse, and Hugo Klesper, both of Aarbergen, Fed. Rep. of Germany, assignors to Passavant-Werke Michelbacher Huette, Fed. Rep. of Germany

Filed Oct. 25, 1979, Ser. No. 88,017

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850223

Int. Cl.³ B01D *25/12*

U.S. Cl. 210—138 **2 Claims**



1. In a chamber filter press having a plurality of movable linked filter plates suspended for movement along horizontal guides, each said filter plate carrying a cam, means for separating a plurality of said filter plates with the opening of said filter press, with an endless filter plate transporting assembly, driven by a reversible motor and carrying dogging members which move over said cams on abutted filter plates in both directions with the exception of the cam on a foremost filter plate while the press is being opened, said dogging members engaging said cams of said filter plates separated by said linkage and having a switch means which reverses the direction of rotation of the motor from forward to reverse motion when the filter plate which has just been moved rests against the previously moved filter plate, connection means operatively connecting said switch means to a time control means which is energized in response to switching over to said reverse motion and at the end of a preset time said time control means switches said reversible motor again from reverse to forward motion.

4,265,750

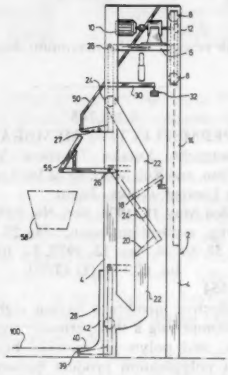
BAR SCREEN FILTERING DEVICE

Gabriel Meunier, 6290 Rue Perinault, Montreal, Quebec, Canada (H4K 1K5)

Filed Aug. 1, 1979, Ser. No. 62,703

Int. Cl.³ B01D *29/38, 35/02*

U.S. Cl. 210—159 **2 Claims**



1. A bar screen and cleaning mechanism in combination with a waste waterway for filtering and removing waste from the waterway comprising a plurality of bar members spaced across the width of the waterway, each bar member having a base component securable to and extending above the bed of the waterway and a free standing upright component extending from said base component to form an approximate L-shaped bar member with the free end of the base component being upstream of said upright component when secured in the waterway, said cleaning mechanism including a rake means and rake guide means, said rake means having a plurality of bar projections spaced for insertion between said base components, said guide means cooperating with said rake means to insert said bar projections from the downstream side of said screen between said bar members adjacent the bed of the waterway and below the upper surface of said base components in preparation for cleaning of said screen and subsequently, allowing said rake means to be drawn essentially vertically upward whereby, said bar projections extend through said upright components and lift waste accumulated on the upstream side of said screen with the movement of said rake means.

4,265,751

EXTERNAL BIOLOGICAL AQUARIUM FILTER

Allan H. Willinger, New York, N.Y., assignor to Willinger Bros., Inc., Englewood, N.J.

Filed Sep. 21, 1979, Ser. No. 77,660

Int. Cl.³ B01D *35/02*

U.S. Cl. 210—169 **9 Claims**

1. An aquarium filter assembly for installation externally of an aquarium tank, comprising:

a filter receptacle;

separation means within said receptacle for providing in said receptacle a filter chamber beneath said separation means and a clean water chamber above said separation means;

said chambers being in fluid flow communication from said

filter chamber up through said separation means to said clean water chamber;

an inlet port provided in said receptacle in communication with said filter chamber;

siphon tube means coupled to said inlet port for a siphon flow of contaminated water from the aquarium tank to said filter chamber;

conduit means in communication with said clean water chamber for supplying clean water from said clean water chamber to the aquarium tank;

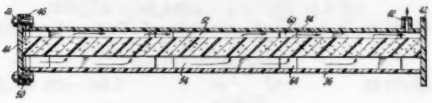
said separation means including a filtering foam material;

support means disposed in said receptacle for supporting said filtering material;

said receptacle including an elongated closed container;

an outlet port provided in said receptacle in communication with said clean water chamber, said conduit means being coupled to said outlet port;

said closed container including a top wall, a bottom wall, side walls, and end walls;



said inlet port being disposed adjacent to one of said end walls and said outlet port being disposed adjacent to the other end wall;

said support means including a first set of elongated ribs extending downwardly from said top wall to provide first elongated rib edges spaced from said bottom wall, and a second set of elongated ribs extending upwardly from said bottom wall to provide second elongated rib edges spaced from said top wall;

said first elongated rib edges being spaced from said second elongated rib edges to define therebetween a channel through said receptacle for receiving therein said filtering foam material;

said first and second elongated rib edges engaging said filtering foam material to retain said filtering foam material in said channel; and

a space between said channel and said top wall defining said clean water chamber, and an opposing space between said channel and said bottom wall defining said filter chamber.

4,265,752

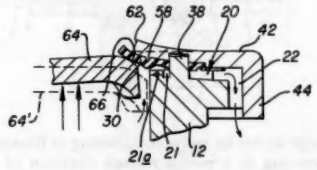
SELF VENTING GAS CAP

John D. O'Banion, Arlington, Tex., assignor to E-Z Fill Corporation, Arlington, Tex.

Continuation-in-part of Ser. No. 765,452, Feb. 3, 1977, Pat. No. 4,091,959, and a continuation-in-part of Ser. No. 805,205, Jun. 9, 1977, Pat. No. Des. 250,468, and a continuation-in-part of Ser. No. 805,497, Jun. 10, 1977, Pat. No. Des. 250,466, and a continuation-in-part of Ser. No. 805,504, Jun. 10, 1977, Pat. No. Des. 250,467. This application May 19, 1978, Ser. No. 907,693

Int. Cl.[3] **B65D** *51/16, 51/24*

U.S. Cl. 210—172 **18 Claims**



1. A closure for a filler neck on a tank, comprising: a closure body including means for securing said closure to the filler neck, a lower end adapted to fit within the filler neck, an upper surface having a vent groove formed therein, and a passage extending through the upper surface and through the lower end, the vent groove having a first end communicating with the passage through the closure body and a second end communicating with the periphery of the closure body; a cap secured to the closure body for covering the upper surface, said cap having an opening extending therethrough and communicating with the passage in said closure body; a convex surface on said cap disposed adjacent the vent groove; a resilient gasket disposed between said cap and said closure body, said gasket having a passage through which the passage in said closure body and the opening in the cap communicate, said resilient gasket being deflected by the convex surface on said cap to close the vent groove, and being sufficiently resilient to permit passage of a fluid through the groove when a pressure differential exceeding approximately one-half pound per square inch exists between the first and second ends of the groove; and means in said passage in the closure body to close the passage in the gasket to prevent flow of fluid therethrough from the tank.

4,265,753

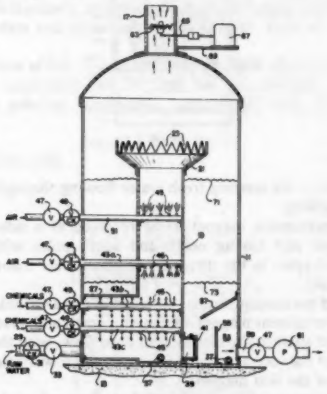
AERATION FILTRATION TANK AND WATER TREATMENT SYSTEM

Maylam Manuel, 601 S. Armada Dr., Venice, Fla. 33595

Filed Jun. 16, 1980, Ser. No. 159,510

Int. Cl.[3] **C02F** *1/20, 1/58*

U.S. Cl. 210—199 **7 Claims**



1. In apparatus for purifying raw feed water containing solid particulate matter and gases, the combination comprising:

(a) a first chamber for holding purified water,

(b) a second chamber disposed within said first chamber,

(c) means for flowing said raw feed water into said second chamber and upwardly in said second chamber,

(d) an overflow platform situated atop said second chamber and above the level of water in said first chamber with flow distributing means disposed around the perimeter of said platform,

(e) means for introducing fluid purifying reagents into the water in said second chamber,

(f) means for exhausting gases within said first chamber and therefrom, and

(g) means for withdrawing the treated and purified water from said first chamber.

7. In apparatus for purifying raw feed water containing solid particulate matter and entrained gases:

(a) a first water receiving chamber,

(b) a second chamber into which said raw feed water first enters disposed within said first chamber,

(c) an annular platform atop said second chamber disposed above the level of water in said first chamber, said annular

platform having an area that is at least four times the area of the cross section of said second chamber,

(d) means around the perimeter of said platform for reducing the speed of water flowing from said platform and for increasing the surface area of water particles exposed to the ambient air within said first chamber, thereby liberating entrained gases in the treated water flowing from said platform,

(e) means for introducing purifying reagents into the raw feed water in said second chamber,

(f) means for aerating said raw feed water in said second chamber,

(g) means for removing liberated gases from said first chamber, and

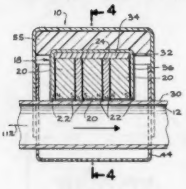
(h) means for removing treated and purified water from said first chamber.

4,265,754

WATER TREATING APPARATUS AND METHODS

Herman E. Menold, Santa Fe Springs, Calif., assignor to Bon Aqua, Inc., Rancho, Calif.

Continuation of Ser. No. 859,831, Dec. 12, 1977, abandoned.
This application Jun. 6, 1980, Ser. No. 62,065
Int. Cl.³ B01D *35/06*
U.S. Cl. 210—222 **5 Claims**



1. A device for treating fresh water flowing through a conduit comprising:

a first permanent magnet to be received at a side of the conduit and having north and south poles which are spaced apart in the direction of water flow through the conduit;

a second permanent magnet received at one axial side of the first permanent magnet and having north and south poles spaced apart in the direction of fluid flow, with the south pole of the second magnet facing axially toward the south pole of the first magnet;

a third permanent magnet located at a second axial side of said first magnet and having magnetic poles spaced apart in the direction of water flow, with the north pole of the third magnet facing axially toward the north pole of said first magnet;

a first ferromagnetic element received axially between said first and second magnets and forming a net south pole projecting radially inwardly beyond said first and second magnets for reception in close proximity to the conduit; and

a second ferromagnetic element received axially between said first and third magnets and forming a net north pole projecting radially inwardly beyond said first and third magnets for reception in close proximity to said conduit.

4,265,755

MAGNETIC FLUID TREATING UNIT

George M. Zimmerman, San Gabriel, Calif., assignor to Bon Aqua, Inc., Rancho, Calif.

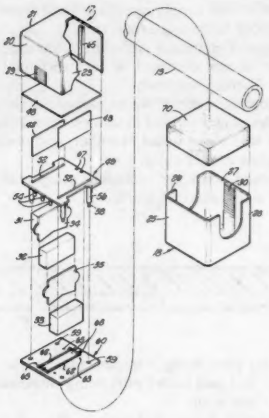
Filed Aug. 23, 1979, Ser. No. 68,754
Int. Cl.³ B01D *35/06*; B03C *1/30*
U.S. Cl. 210—222 **30 Claims**

1. A liquid treating device comprising:

a permanent magnet structure adapted to be received adjacent a conduit through which liquid to be treated is flowing;

a flux return plate of ferromagnetic material at an outer side of said magnet structure;

a part formed of nonmagnetic material interposed between and spacing apart said magnet structure and said flux



return plate and having portions projecting in opposite directions beyond said magnet structure and containing openings; and

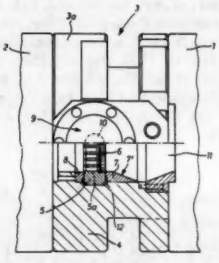
two end plates of ferromagnetic material received adjacent opposite end faces of the magnet structure and extending through said openings respectively in said part of nonmagnetic material to said flux return plate.

4,265,756

CHANGE DEVICE FOR SIEVES FOR FILTERING PLASTIC MATERIALS

Walter H. Schiesser, Zürich, assignor to Schiesser AG, Switzerland

Filed Dec. 13, 1979, Ser. No. 103,169
Claims priority, application Switzerland, Jan. 29, 1979, 865/79
Int. Cl.³ B01D *35/12*
U.S. Cl. 210—236 **7 Claims**



1. A change device for sieves for straining or filtering plastic materials moving in a predetermined direction of material flow, comprising:

a sieve holder mountable in the direction of material flow; said sieve holder being provided with a bore for the throughflow of material;

a plurality of sieve supports;

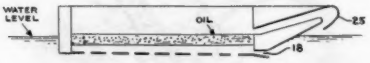
a guide slot arranged transversely with respect to said bore for the passage therethrough of said sieve supports;
each of said sieve supports comprising a perforated plate and containing at least one sieve;
said sieve supports together with said sieves being insertable directly in succession into said sieve holder;
one of said sieve supports and its respective sieve being located in a work position;
a sleeve member arranged in said bore forwardly of said perforated plate for sealing said sieve support together with its sieve which is located in said work position in the direction of material flow;
said sleeve member bearing against said perforated plate;
a sealing ring bearing against said perforated plate and arranged following said perforated plate in said bore; and
means for selectively forwardly advancing the successively arranged sieve supports, in order to thereby place each successive sieve in a work position.

4,265,757

DEVICE FOR REMOVING OIL SLICKS

Alexander Ivanoff, 20 Brookside Dr., Greenwich, Conn. 06830

Filed Mar. 9, 1979, Ser. No. 19,000
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.3 **16 Claims**



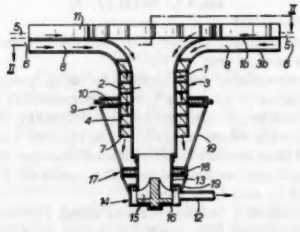
1. A skimmer vessel for skimming oil floating on open water, said vessel comprising: a hull having a forwardly facing broad and substantially flat bow wall surface rearwardly and downwardly slanted toward the stern of the hull, said bow surface including an elongate and substantially horizontally disposed inlet opening at the rear thereof; a hold within the hull communicated with said inlet opening for accumulating therein a pool of oil and water deflected along said slanted bow wall and entering into said opening upon forward drive of the vessel; and vane means extending from and across said slanted bow wall surface for reducing forward splashing of oil and water as caused by pitching of the hull thereby increasing the entry of oil and water into the hold within the hull, said vane means comprising a plurality of spaced vane members having upper edges secured to said bow surface and lower edges spaced from said bow surface rearwardly and downwardly such that the vane members are inclined with respect to said bow surface at an acute angle rearwardly and downwardly.

4,265,758

COLLECTION OF A SURFACE LAYER OF LIQUID

Charles J. Fox, Hesley Cottage, Selbourne, Hampshire, England

Filed Nov. 5, 1979, Ser. No. 90,974
Int. Cl.³ E02B *15/04*
U.S. Cl. 210—242.3 **18 Claims**



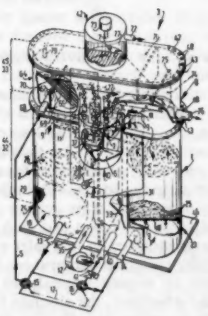
1. Apparatus for collecting the surface layer of a body of liquid, said apparatus comprising a buoyant body for floating in the liquid at a predetermined level therein, said body having a central passage for receiving the surface layer and having an axis which is substantially vertical and an upper end and a lower end, said upper end being open and lying in a plane substantially at the interface between the surface layer and the underlying layers of liquid and said lower end being connected to the inlet of first pump means for removing liquid therefrom, said body also having an annular passage for receiving liquid underlying the surface layer, said annular passage surrounding and being coaxial with said central passage and having an upper end and a lower end, said ends of said annular passage being open and said upper end lying in a plane below the interface between the surface layer and underlying layers, second pump means in said annular passage for driving liquid through said passage from the upper end to the lower end, and means connected to the outlet of said first pump means for receiving the liquid removed thereby from said central passage the plane of the upper end of said central passage being positioned relative to said interface that upon operation of said first pump means substantially only surface layer enters such central passage, the plane of the upper end of said annular passage being positioned relative to said interface that upon operation of said second pump means substantially only the underlying layer of liquid enters said annular passage.

4,265,759

DEVICE FOR SEPARATING A MIXTURE

Willem A. Verpalen, and Theodorus A. J. Koot, both of Nieuwegein, Netherlands, assignors to Ballast-Nedam Groep N.V., Amsterdam and Skimovex B. V., Utrecht, both of, Netherlands

Continuation of Ser. No. 11,693, Feb. 12, 1979, abandoned. This application Feb. 20, 1980, Ser. No. 123,028
Claims priority, application Netherlands, Feb. 14, 1978, 7801685
Int. Cl.³ B01D *23/10*
U.S. Cl. 210—261 **8 Claims**



1. A device for separating a mixture of a carrier medium and at least one substance which is insoluble therein, for example, water and oil, said device comprising, in combination:
a housing having a top and a bottom and an intermediate wall sealing the interior of the housing into upper and lower compartments;
intermediate separator means in one of said compartments and post-separator means for promoting the separation of said mixture in the other of said compartments; said intermediate separator means comprising a first vertically elongate chamber having a bed of particulate filter material therein and a second vertically elongate chamber having a bed of particulate filter material therein, each such chamber terminating at its upper end at the same level within said housing, conduit means communicating said upper ends of the two chambers, the conduit means comprising the upper portion of the compartment in

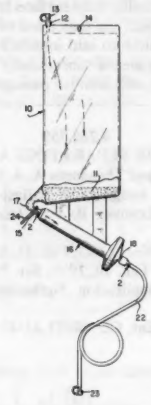
which said intermediate separator means is located and a horizontally extending partition within said housing bridging the upper ends and said first and second chamber, and there being first collection means in lateral communication with said conduit means at a point intermediate said first and second chambers, said collector means comprising a further chamber exterior to said housing laterally displaced and extending above said conduit means.

4,265,760

DEVICE FOR DILUTION AND DELIVERY OF IN VIVO CHEMICALS

Kenneth Abel, and Robert T. Buck, both of Raleigh, N.C., assignors to Becton Dickinson & Company, Paramus, N.J.

Filed Feb. 26, 1979, Ser. No. 15,480
Int. Cl.³ B01D *27/02*
U.S. Cl. 210—282 **11 Claims**



1. A device for dilution and delivery of diluted chemicals for in vivo use, comprising:

a disposable, collapsible flexible container for dilution and delivery of diluted chemicals for in vivo use, said container having an inlet means at one end and an outlet means at a second opposite end; a cartridge having an inlet end and an outlet end, an adsorbent for adsorbing contaminants in said cartridge adjacent said inlet end, an absolute filter having a pore size of no greater than 0.45μ in said cartridge adjacent said outlet end, said outlet end of said cartridge being attached to said inlet means of said container, whereby unsterilized diluent can be introduced into the container by passing through the inlet end of the cartridge, the adsorbent, the absolute filter and the inlet means of the container for effecting sterilization and removal of endotoxins and organic contaminants from the diluent and diluted chemicals delivered from the container through the outlet means thereof for in vivo use.

4,265,761

FLUID FILTERING DEVICE

Borje O. Rosaen, 4031 Thornoaks Dr., and Dale P. Fosdick, 3000 Hunting Valley Dr., both of Ann Arbor, Mich. 48104

Continuation-in-part of Ser. No. 963,034, Nov. 22, 1978, Pat. No. 4,197,207. This application Sep. 17, 1979, Ser. No. 76,393
Int. Cl.³ B01D *35/02*
U.S. Cl. 210—315 **9 Claims**

1. A fluid filtering device for connection with a fluid line, said device comprising:

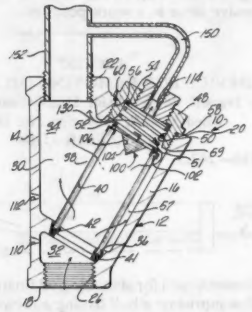
a housing having a fluid inlet and a fluid outlet substantially aligned with each other;

fluid passage means formed in said housing for connecting said inlet to said outlet, said passage means including a port formed along its length and adjacent the fluid inlet;

said housing further comprising a first substantially tubular cylindrical portion having said inlet formed at one end and said outlet formed at the other end, said housing further comprising a second substantially tubular cylindrical portion intersecting said first portion at said port and branching outwardly from said first portion at an acute angle, said first housing portion defining an outlet chamber open to said outlet and said second portion defining a filter chamber open along one entire side to said outlet chamber,

a tubular filter element open at one end;

means for axially slidably mounting said filter element in said filter chamber between a first and second axial position,



wherein in said first position the open end of said filter element abuts against said port so that the interior of said filter element is open to the housing inlet while the exterior of the filter element is open to the housing outlet, and wherein in said second position said open end of the filter element is spaced from the port to thereby enable fluid flow through the passage means to bypass the filter element;

means for resiliently urging said filter element toward said first position;

said mounting means further comprising a cap secured to the other end of the second housing portion, and

an air bleed conduit fluidly connected at one end to said outlet and fluidly connected at its other end to an opening formed through said cap wherein said cap opening is aligned with the interior of the filter element.

4,265,762

FILTER ASSEMBLY FOR USE IN THE FILTRATION OF MEDICAL TREATMENT LIQUIDS

David L. Brenholt, Dundas, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Nov. 24, 1978, Ser. No. 963,441
Int. Cl.³ B01D *31/00*
U.S. Cl. 210—321.1 **6 Claims**

1. A filter assembly for use in the filtration of medical treatment fluids comprising:

a filter membrane, said membrane being comprised of a longitudinally extending piece of porous filter media having a first major surface and a second major surface;

first enclosure means received about the first major surface of said filter media to define an inlet chamber between said first enclosure means and said filter media for a liquid to be filtered by said filter media;

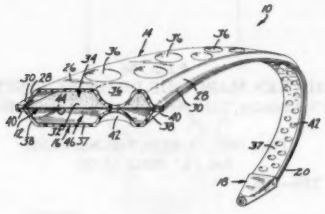
second enclosure means received about the second major surface of said filter media to define an outlet chamber between said second enclosure means and said filter media for fluid filtered through said filter media;

said first enclosure means including a first wall member of

flexible material having a first enclosure major surface extending over said first major surface, said flexible material being impermeable to liquid and gas;

said second enclosure means including a second wall member of flexible material having a second enclosing major surface extending over said second major surface, said last-mentioned flexible material being impermeable to liquid and gas, each wall member comprising a strip of flexible plastic material having opposed lengthwise edges, each lengthwise edge of said strip comprising said first enclosure means being attached to the first major surface of said filter media and each lengthwise edge of said strip comprising said second enclosure means being attached to the second major surface of said filter media;

means for preventing the ballooning of the flexible material of said first and second wall member away from said filter membrane, said ballooning preventing means including a first plurality of projections and a second plurality of projections, said first plurality of projections being formed in the first enclosing major surface and extending into said inlet chamber, contacting said first major surface of said filter membrane and being fixedly attached thereto, said



second plurality of projections being formed in the second enclosing major surface and extending into said outlet chamber, contacting said second major surface of said filter membrane and being fixedly attached thereto, said projections comprising dimples formed in said flexible plastic material;

inlet means for admitting fluid to be filtered into said inlet chamber;

outlet means for allowing filtered fluid to leave said outlet chamber;

means for venting from said filter assembly air entrained in a liquid being filtered by said filter assembly, said vent means including a plurality of apertures through the first enclosure means and discrete blocks of hydrophobic material disposed between said apertures and said filter media, said apertures being formed through a plurality of the dimples of said first enclosure means, each of the dimples having an aperture through it being bent outwardly away from said filter media, and one of said discrete blocks of hydrophobic material being disposed between each of said apertured dimples and said filter media, each of said blocks of hydrophobic material being in the shape of a sphere.

4,265,763

PERMEATOR APPARATUS

Wayne A. Bollinger, Cary, and Roger G. Guay, Apex, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 18, 1979, Ser. No. 86,211

Int. Cl.³ B01D *31/00*

U.S. Cl. 210—323.2 **22 Claims**

1. An apparatus comprising

(a) an elongated tubular shell having at least one open end;

(b) an essentially fluid impermeable end closure cap fastened to and covering said elongated tubular shell at the open end, said end closure cap having at least one fluid communication port;

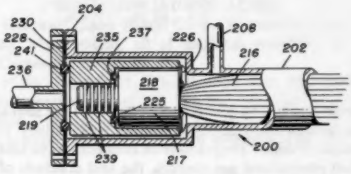
(c) a plurality of tubes which are generally parallel and extended longitudinally to form at least one bundle in the elongated tubular shell;

(d) a rigid, essentially fluid impermeable tube sheet in which the tubes of said at least one bundle are embedded in a fluid tight relationship in the tube sheet such that the lumens of the tubes provide fluid communication through the tube sheet wherein:

(i) the tube sheet has an end face, an opposing bundle face from which said at least one bundle extends in to the tubular shell, and a lateral surface extending between said faces,

(ii) the tube sheet has an expanded zone which expanded zone extends a portion of the lateral surface of the tube sheet, and at least one of said end face and said bundle face has at least one smaller cross-sectional dimension than the corresponding cross-sectional dimension of said expanded zone,

(iii) the at least one cross-sectional dimension of the expanded zone is greater than the corresponding cross-sectional dimension of the remainder of the tube sheet, and



(iv) the tube sheet has at least one rise region on the lateral surface of the tube sheet, which rise region is intermediate the expanded zone and a smaller face, wherein, over the rise region, at least one cross-sectional dimension of the tube sheet increases;

(e) a rigid tubular spacer substantially surrounding the lateral surface of the tube sheet for at least a portion of the distance between the faces and abutting at least one rise region of the tube sheet, wherein said tubular spacer defines an opening adapted to receive said tube sheet for said at least a portion of the distance between the faces and position the tube sheet within the spacer, said opening having a cross-section which is sufficiently large to provide space between the tubular spacer and the tube sheet to accommodate differentials in expansion between the tubular spacer and the tube sheet; and

(f) a sealing means positioned between (i) at least one of the tube sheet and tubular spacer and (ii) at least one of the end closure cap and tubular shell, such that the lumens of the tubes extending to the end face of the tube sheet are in a fluid tight relationship with respect to the exterior of the tubes extending from the bundle face of the tube sheet.

4,265,764

ROTARY DRUM VACUUM FILTER

Emilio Gallottini, Lodi, Italy, assignor to Esmil B.V., Amersfoort, Netherlands

Filed May 1, 1979, Ser. No. 34,931

Claims priority, application Netherlands, May 3, 1978, 7804735

Int. Cl.³ B01D *33/04*

U.S. Cl. 210—390 **7 Claims**

1. Rotary drum vacuum filter, comprising

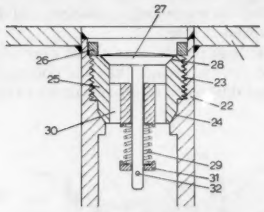
(a) a hollow drum having a cylindrical drum wall, end walls, and a drum axis and rotatable about the drum axis, the cylindrical drum wall, which in use supports filter material, being divided into a plurality of axially extending sectors,

(b) a rotary valve member mounted on an end wall on the

axis for rotation with the drum and having an axial face with a plurality of apertures divided in groups arranged respectively at different radial distances from the drum axis,

(c) a fixed valve member having an axial face axially opposed to said axial face of the rotary valve member and having apertures coincidable with said apertures of said rotary valve member, said fixed valve member having connectors communicating with said orifices for connecting to sources of vacuum and pressurized gas,

(d) a plurality of conduits for each said sector of the drum wall mounted within said drum, connecting the said sectors to the said apertures of the rotary valve member so that, when the drum rotates, the rotary and fixed valve



members act, by relative movement of their said apertures, to switch the respective sectors successively through a predetermined programme of connections to said vacuum and pressurized gas sources, the said conduits of the sectors being divided into a plurality of groups with all the conduits of a group being connected to one orifice of the rotary valve member and having the same function in relation to their respective associated sectors,

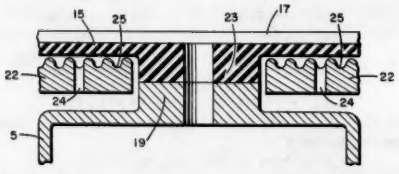
(e) the conduits of a first one of said groups of conduits each having, at its end and flush with the fluid collecting surface interiorly of the drum, a one-way valve which if closed prevents liquid from being collected by an otherwise open-ended conduit and then blown back into the filter with subsequent air discharge by the conduit.

4,265,765

VACUUM FILTERBELT APPARATUS

Emilio Gallottini, Lodi, Italy, assignor to Esmil S.p.A., Milan, Italy

Continuation of Ser. No. 3,399, Jan. 12, 1979, abandoned. This application Mar. 10, 1980, Ser. No. 128,564
Claims priority, application Italy, Jan. 10, 1978, 67032 A78
Int. Cl.[3] B01D *33/04*
U.S. Cl. 210—401 **6 Claims**



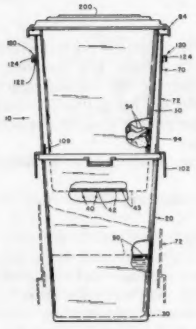
1. In a vacuum filterbelt apparatus comprising a continuous belt, driving means for moving said belt along a continuous path which includes an operative path portion at which the upper face of the belt is concave and apertures extend therethrough, at least one vacuum chamber extending beneath the belt in frictional contact with said belt and in communication with said apertures, whereby suction filtering of material on the belt is effected and independent stationary support members for said belt positioned beneath the belt and spaced from said vacuum chamber surface, said support members defining passages therethrough opening at their upper surfaces for supply of lubricating agent beneath the moving belt, the improvement that the upper surfaces of the support members have grooves running in the longitudinal direction of said belt for the entire length of the supports, the said passages opening into said grooves.

4,265,766

CHICKEN MARINADE DRAINING SYSTEM

Leonard S. Crossley, 3218 Nebraska Ave., Council Bluffs, Iowa 51501

Filed Nov. 15, 1979, Ser. No. 94,385
Int. Cl.[3] B01D *23/06*
U.S. Cl. 210—455 **4 Claims**



1. A chicken marinade drainer comprising: an outer receptacle having upwardly extending outer walls, an inner receptacle inside said outer receptacle and also having upwardly extending outer walls, said inner receptacle being capable of being maintained in a lower marinating position and in an upper draining position, said inner receptacle having a bottom wall extending transversely to the vertical, said bottom wall comprising marinade draining opening means constructed and arranged so as to be substantially under a level of marinade in said outer receptacle during marinating, said inner receptacle when in said lower position being adapted to contain chicken parts and marinade, said inner receptacle being capable of being raised to an upper position with respect to said outer receptacle in which the bottom of said inner receptacle is above the level of marinade in said outer receptacle so marinade can drain out of said opening means into said outer receptacle, said marinade draining opening means comprising a plurality of elongated slots, the elongation of said slots extending transversely to the vertical, said slots also extending directly downwardly from the top side completely through the bottom side of said inner receptacle bottom wall.

4,265,767
METHOD AND APPARATUS FOR PURIFICATION OF WASTE WATER

Günther Gappa, Gelsenkirchen-Buer; Harald Jüntgen, and Jürgen Klein, both of Essen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

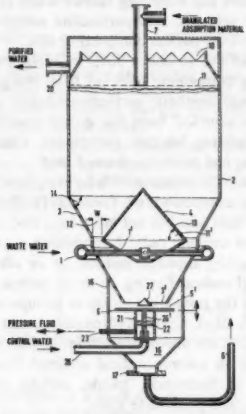
Continuation of Ser. No. 663,986, Mar. 4, 1976, abandoned, which is a continuation-in-part of Ser. No. 602,000, Aug. 5, 1975, Pat. No. 4,202,770. This application Jun. 11, 1979, Ser. No. 47,201

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1974, 2437745

The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.

Int. Cl.³ B01D *15/02*

U.S. Cl. 210—662 **8 Claims**



1. A method of purifying contaminated fluids in an upright vessel, comprising the steps of continuously admitting a flow of inorganic particulate purifying material into an upper end portion of the vessel, for downward movement therein; continuously admitting a flow of contaminated fluid into a confined space located in a lower end portion of the vessel and bounded in part by an upwardly tapering conical upper wall a generatrix of which includes with a horizontal line an angle of 40°–60°; continuously discharging the contaminated fluid from the confined space through a plurality of closely adjacent substantially uniformly arranged apertures in the upper wall, in form of individual upwardly flowing streams which are distributed over the entire cross-sectional area of the lower vessel end portion so that a purification front develops at which the downwardly moving inorganic particulate material is laden over the entire vessel cross-section with impurities removed from the upwardly moving contaminated fluid; and maintaining the location of the purification front substantially steady relative to the downwardly moving particulate material and to the vessel at a preselected level of the vessel.

4,265,768
ION EXCHANGE MATERIAL PREPARED FROM PARTIALLY PYROLYZED MACROPOROUS POLYMER PARTICLES

Glenn H. Beasley, Newtown; Berni P. Chong, Dresher, both of Pa.; Warren T. Ford, Stillwater, Okla., and James W. Neely, Dresher, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 26, 1979, Ser. No. 107,114

Int. Cl.³ B01J *39/24, 41/18*

U.S. Cl. 210—682 **22 Claims**

18. A process for removing ions from solution which comprises contacting the solution, for sufficient time to permit ion exchange, with macroporous, carbonaceous, particles bearing ion exchange functional groups, the particles being derived from carbonaceous, macroporous polymer adsorbent particles which

(a) comprise the product of controlled thermal degradation, at a temperature of about 300° C. to about 800° C., of a macroporous, synthetic polymer containing macropores ranging from about 5 to about 10,000 nanometers in average critical dimension and containing a carbon-fixing moiety,

(b) are themselves derived from one or more ethylenically unsaturated monomers, or monomers which may be condensed to yield macroporous polymers, or mixtures thereof, one of the monomers being styrene, and

(c) have at least 85% by weight of carbon, multimodal pore distribution with macropores ranging in size from about 5 to about 10,000 nanometers in average critical dimension, and a carbon-to-hydrogen atom ratio of between about 1.5.1 and about 20:1.

4,265,769
METHOD OF TREATING AQUEOUS SYSTEMS WITH PHOSPHONOADIPIC ACIDS

John G. Dingwall, Sale; Barry Cook, Manchester, and Alan Marshall, Macclesfield, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 15,016, Feb. 26, 1979, Pat. No. 4,208,344, which is a continuation of Ser. No. 862,795, Dec. 21, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 87,133

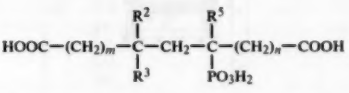
Claims priority, application United Kingdom, Dec. 24, 1976, 54106/76

Int. Cl.³ B01D *21/01*

U.S. Cl. 210—699 **14 Claims**

1. A method of treating an aqueous system in order to provide the inhibition of corrosion of ferrous metals in contact therewith; the inhibition of precipitation of calcium, magnesium, barium or strontium salts from said aqueous system; and the dispersion of inorganic materials present in said aqueous system which comprises

adding to an aqueous system (a), per million parts by weight of said aqueous system, from 0.1 to 1000 parts of (b) a compound or mixture of compounds of the formula



in which m and n may be 0 or 1, but both cannot be 1, and R^2, R^3 and R^5 are independently hydrogen or methyl; or the water-soluble inorganic or organic salts thereof; with the proviso that at least one of R^2, R^3 and R^5 must be methyl, and when m and n are both 0, all of R^2, R^3 and R^5 are methyl.

4,265,770
SEPARATION OF SUSPENDED SOLIDS FROM PHOSPHATE TAILINGS

James P. Thomas, Woodland, Calif., assignor to Amstar Corporation, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 93,005

Int. Cl.³ B01D *21/01;* **C02F** *1/56*

U.S. Cl. 210—715 **5 Claims**

1. A process for separating suspended solid clay particles from phosphate tailing slimes comprising:

a. adding an amount of finely divided sand particles to the slimes such that the resulting slimes contain clay and sand in a ratio of about 1:1 by weight;

b. forming a slurry by treating the resulting slimes with an anionic polyelectrolyte flocculating agent to bring about at least partial agglomeration of clay and sand particles;

c. introducing the slurry as an influent feed into a seperation

vessel beneath the upper boundary of a solids settling zone containing previously formed agglomerates of solid clay and sand particles at a concentration higher than the concentration in the influent feed;

d. deflecting the path of the influent feed radially outwardly from the point of influent feed introduction through the settling zone without additional agitation, thereby effecting increased contact between clay and sand particles in the influent fee and agglomerated clay and sand particles in the settling zone, additional agglomeration of clay and sand particles within the settling zone, and the formation of clarified liquid in the upper portion of the separation vessel;

e. continuously removing a relatively dense sludge containing agglomerated clay and sand particles from the settling zone at a rate which maintains the upper boundary of the settling zone substantially stationary; and

f. continuously removing clarified liquid from the upper portion of the separation vessel.

4,265,771

ALLUVIAL FILTER CANDLE APPARATUS AND A METHOD OF CLEANING THE SAME

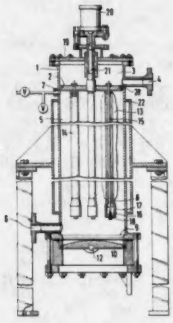
Rüdiger Lennartz, Pulheim, and Ingo Romey, Hünxe, both of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Jul. 2, 1979, Ser. No. 54,481

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 2828976

Int. Cl.³ B01D *25/32*

U.S. Cl. 210—769 **22 Claims**



1. An alluvial candle filter apparatus, comprising a housing; a substantially horizontal partition in an upper part of said housing and subdividing the latter into an upper filtrate chamber having a filtrate outlet for discharging a filtrate, and a lower filtrant chamber having a filtrant inlet located in the lowest region of said filtrant chamber and arranged for admitting a filtrant, a pressure gas opening located in the uppermost region of said filtrant chamber and arranged for admitting a pressure gas for expelling residual filtrate and filtrant and drying a filter cake, and a closeable filter cake discharge outlet located in the lowermost region of said filtrant chamber for discharging the filter cake, said partition being sealed against and displaceable relative to said housing; a plurality of filtering element for filtering the filtrant and each having a substantially upright axis and including a filter candle body extending in said filtrant chamber in an axial direction, a riser extending in the interior of said filtrant candle body in the axial direction and mounting the latter to said partition, said riser having a lower end portion provided with at least one filtrate inlet opening and an upper end portion being open into said filtrate chamber, and a return casing surrounding said lower end portion of said riser and preventing backflow of the filtrate through the filter cake, said return casing having a volume substantially corresponding to that of said riser; and means for releasing the dried filter cake from said filter candle bodies and including an arrangement which is connected with said partition in the upper part of said housing and operative for forcedly displacing the latter together with said filter candle bodies in the axial direction of the latter and with acceleration.

4,265,772

ANTISTATIC, FABRIC-SOFTENING DETERGENT ADDITIVE

Kenneth L. Jones, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 961,446, Nov. 16, 1978, abandoned. This application Aug. 8, 1979, Ser. No. 64,955

Int. Cl.³ D06M *13/46*

U.S. Cl. 252—8.6 **25 Claims**

1. The particulate detergent additive for preventing static buildup on textiles and softening fabrics when applied thereto from a laundry solution, said particulate additive being produced by the at least partial complexing of:

(a) from about 1% to about 90% by weight of an anionic complexing component selected from the group consisting of anionic synthetic surfactants; soaps; nonsurfactant electrolytes selected from the group consisting of alkali metal phosphates, borates, carbonates, silicates, sulfates, and citrates; and mixtures thereof; and

(b) from about 10% to about 99% by weight of a quaternary ammonium compound of formula $[R_1R_2R_3R_4N]^+Y^-$ wherein at least one, but not more than two, of R_1, R_2, R_3, and R_4 is an organic radical containing a group selected from a C_{16}–C_{22} aliphatic radical, or an alkyl phenyl or alkyl benzyl radical having 10 to 16 carbon atoms in the alkyl chain, the remaining group or groups being selected from C_1–C_4 alkyl, C_2–C_4 hydroxyalkyl, and cyclic structures in which the nitrogen atom forms part of the ring, Y constituting an anionic radical selected from the group consisting of hydroxide, halide, sulfate, methylsulfate, ethylsulfate and phosphate ions;

wherein said complex constitutes at least 25% of the surfaces of said particulate additive and wherein substantially all of the additive particles have a size of about 10 microns to about 500 microns, a solubility in water of about 50 ppm maximum at 25° C., and a softening point of from about 75° F. to about 250° F.

4,265,773

PROCESS OF PREPARING MOLYBDENUM COMPLEXES, THE COMPLEXES SO-PRODUCED AND LUBRICANTS CONTAINING SAME

Louis deVries, Greenbrae, and John M. King, San Rafael, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jun. 28, 1979, Ser. No. 53,013

Int. Cl.³ C10M *1/54*

U.S. Cl. 252—46.4 **11 Claims**

1. A process for preparing a sulfurized molybdenum-containing composition which comprises (1) reacting an acidic molybdenum compound, and an oil-soluble basic nitrogen compound selected from the group consisting of a succinimide, carboxylic acid amide, Mannich base, phosphonamide, thiophosphonamide, phosphoramide, dispersant viscosity index improver or mixtures thereof to form a molybdenum complex wherein from 0.01 to 2.00 atoms of molybdenum are present per basic nitrogen atom; and (2) reacting said complex with carbon disulfide in an amount to provide 0.1 to 4.0 atoms of sulfur per atom of molybdenum, to form a sulfur- and molybdenum-containing composition.

9. The product prepared by the process of claim **1**, **2**, **3**, **4**, **5**, **6**, **7** or **8**.

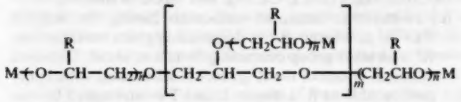
10. A lubricating oil composition comprising an oil of lubricating viscosity and from 0.05 to 15% by weight of the product of claim **9**.

4,265,774
OXYALKYLATED POLYGLYCEROLS AND WATER-BASED LUBRICANTS PREPARED THEREFROM

William K. Langdon, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

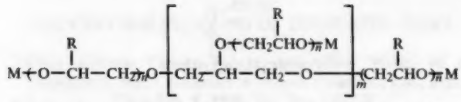
Filed Oct. 29, 1976, Ser. No. 736,948
Int. Cl.[3] C10M 1/06
U.S. Cl. 252—49.3 4 Claims

1. A composition of matter comprising a mixture of compounds having the formula:



where R is hydrogen or a methyl group and in which at least 75% of the R groups are hydrogen, M is hydrogen or an alkali metal, m is an integer having an average value greater than 5, and n is an integer having an average value high enough to provide a compound mixture having an average molecular weight greater than about 20,000.

3. A hydrolube composition consisting essentially of from about 62 to about 92% by weight of water, from about 1 to about 3% by weight of additives, and from about 2 to about 20% by weight of a mixture of compounds having the formula:

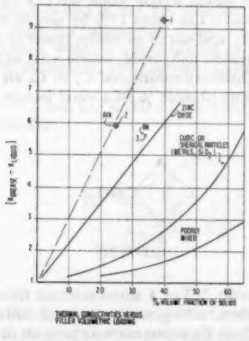


where R is hydrogen or a methyl group and in which at least 75% of the R groups are hydrogen, M is hydrogen or an alkali metal, m is an integer having an average value greater than 5, and n is an integer having an average value high enough to provide a compound mixture having an average molecular weight greater than about 20,000.

4,265,775
NON-BLEEDING THIXOTROPIC THERMALLY CONDUCTIVE MATERIAL

Nandakumar G. Aakalu, Poughkeepsie, and Lawrence A. Rittmiller, Saugerties, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 16, 1979, Ser. No. 67,481
Int. Cl.[3] H01B 3/46, 3/20, 3/10
U.S. Cl. 252—573 10 Claims

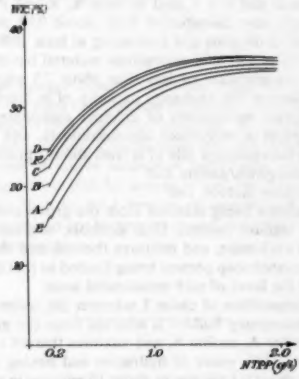


1. A non-bleeding thixotropic thermally conductive material comprising a liquid organo-silicone carrier, substantially spherical silica in an amount effective to prevent bleeding of said liquid carrier, substantially all of said silica being less than 5 microns in size, and one or more thermal filler powders selected from the group consisting of dendritic zinc oxide, lamellar aluminum nitride, lamellar boron nitride and a mixture of two or more thereof, said silica being added to said liquid organo-siicone carrier prior to the adding of said one or more thermal filler powders, whereby said material is rendered non-bleeding.

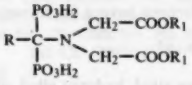
4,265,776
DETERGENT AND CLEANING COMPOSITIONS

Werner Gohla, Niederkassel; Klaus Hestermann; Joachim Kandler, both of Erftstadt; Horst-Dieter Wasel-Nielen, Hürth; Klaus Sommer; Hans-Adolf Rohlfs, both of Heidelberg, and Karl Merkenich, Rimbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 968,295, Dec. 11, 1978, abandoned.
This application Mar. 13, 1980, Ser. No. 130,156
Claims priority, application Fed. Rep. of Germany, Dec. 19, 1977, 2756516
Int. Cl.[3] C11D 3/30, 7/56, 9/42
U.S. Cl. 252—98 1 Claim



1. Cleaning and detergent composition containing from 0.2–5 weight % of at least one compound of the formula



wherein R is hydrogen or methyl and R_1 is hydrogen or an alkali metal or NH_4 ion,

15–30 weight % of an alkali metal triphosphate,

6–25 weight % of at least one surfactant selected from the group consisting of dodecylbenzenesulfonate, tallow fatty alcohol ethoxylated with 11 mols of ethylene oxide and hardened tallow soap, and

30–78.8 weight % of sodium perborate tetrahydrate alone or together with at least one substance selected from the group consisting of magnesium silicate, sodium silicate, sodium sulfate and carboxymethylcellulose.

4,265,777

DETERGENT COMPOSITIONS CONTAINING AN ALUMINOSILICATE DETERGENCY BUILDER AND AN UNSATURATED FATTY ACID SOAP

Stanton L. Boyer, Fairfield, and Denzel A. Nicholson, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 17, 1980, Ser. No. 141,222
Int. Cl.[3] C11D *3/12, 9/18, 10/04*
U.S. Cl. 252—113 **15 Claims**

1. A detergent composition consisting essentially of:

(a) from about 1% to about 20% of synthetic detergent surfactant which is an efficient soap curd dispersant, said surfactant being selected from the group consisting of:

(1) water-soluble nonionic detergent surfactants;

(2) water-soluble synthetic anionic detergent surfactants;

(3) water-soluble zwitterionic detergent surfactants;

(4) water-soluble amphoteric detergent surfactants;

(5) water-soluble semi-polar nonionic detergent surfactants; and

(6) mixtures thereof;

(b) from about 5% to about 60% of water-soluble soap of unsaturated fatty acids containing from about 16 to about 22 carbon atoms; and

(c) from about 5% to about 50% of a water-insoluble inorganic detergency builder selected from the group consisting of:

(1) zeolite A;

(2) zeolite X;

(3) zeolite P;

(4) amorphous hydrated aluminosilicate material of the empirical formula $M_z(zAlO_2.ySiO_2)$ wherein M is sodium, potassium or ammonium; z is from about 0.5 to about 2; and y is 1, said zeolites A, X and P having a particle size diameter of from about 0.01 microns to about 25 microns and containing at least 10% water of hydration and said amorphous material having a particle size diameter of less than about 25 microns, and magnesium ion exchange capacity of at least about 50 milligram equivalents of calcium carbonate hardness per gram of anhydrous aluminosilicate, and a magnesium ion exchange rate of at least about 1 grain/gallon/minute/gram/gallon; and

(5) mixtures thereof; and

(d) the balance being selected from the group consisting of water, sodium sulfate, C_{1-4} alcohols, sodium silicates, sodium carbonate, and mixtures thereof, and the level of any saturated soap present being limited so that it does not exceed the level of said unsaturated soap.

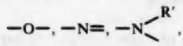
2. The composition of claim 1 wherein the water-insoluble inorganic detergency builder is selected from the group consisting of zeolite A, zeolite X, and mixtures thereof containing at least about 10% water of hydration and having a particle size of from about 0.1 micron to about 10 microns in an amount from about 15% to about 40% by weight of the composition.

6. The detergent composition of claim 2 wherein the synthetic detergent surfactant is selected from the group consisting of:

(a) nonionic surfactants having the formula:

$$R(Z)(C_2H_4)_xO—R^1$$

wherein R is an alkyl, hydroxy alkyl, alkylene, hydroxy alkylene, acyl, or hydroxy acyl group containing from about 8 to about 22 carbon atoms or an alkylbenzene group wherein the alkyl group contains from about 6 to about 15 carbon atoms and mixtures thereof; Z is selected from the group consisting of



and mixtures thereof; X is a number from 0 to about 30; and R' is selected from the group consisting of H, alkyl groups containing from 1 to about 4 carbon atoms, acyl groups containing from 2 to about 4 carbon atoms and mixtures thereof;

(b) anionic surfactants having the formula:

$$R(O)_y(R^2O)_xSO_3M$$

wherein R has the meaning given hereinbefore; Y is 0 or one, but is always one when x is more than 0; R^2 is selected from the group consisting of $—C_2H_4—$, $—CH_2CHOH—CH_2—$, $—CH_2CH(CH_3)—$, and mixtures thereof; x can vary from 0 to about 30; and M is selected from the group consisting of Na, K, $—N(C_2H_4OH)_{0-3}(H)_{1-4}$, Ca, Mg, and mixtures thereof;

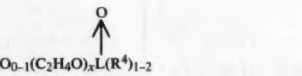
(c) zwitterionic detergent surfactants having the formula $RL^{\oplus}R^3_{2-3}$ wherein R has the meaning given hereinbefore; R^3 is an alkyl group containing from 1 to about 22 carbon atoms; R or one of the R^3 groups is substituted with T; the portion of R or R^3 between L and T is interrupted by one to about ten groups selected from the group consisting of ether, ester, and amide groups and mixtures thereof; L is N, P or S; and T is $—SO_4^{\ominus}$, $—COO^{\ominus}$, or $—SO_3^{\ominus}$, there being no more than one hydrophobic group;

(d) amphoteric detergent surfactants having the formula:

$$RLR^3_{1-2}$$

wherein R, L and R^3 have the meanings given hereinbefore;

(e) semi-polar nonionic detergent surfactants having the formula:



wherein R, L and x are as stated hereinbefore and each R^4 is selected from the group consisting of C_{1-4} alkyl and hydroxy alkyl groups and polyethoxylate groups containing from 1 to about 10 ether linkages; and said R^3 groups can be connected through an oxygen or a nitrogen atom; and

(f) mixtures thereof.

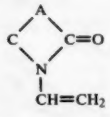
4,265,778

SOAP BAR

Gerard G. Sonenstein, Yardley, Pa., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 825,350, Aug. 17, 1977, abandoned.
This application Apr. 23, 1979, Ser. No. 32,793
Int. Cl.[3] C11D *9/30, 15/04*
U.S. Cl. 252—117 **9 Claims**

1. A soap bar comprising a water soluble alkali metal, ammonium, or lower molecular weight amine salt of a C_8 to C_{24} fatty acid and from about 0.1 to about 15% by weight based on the weight of said fatty acid salt of an interpolymer of (1) about 10 to 90 mole % of maleic anhydride, maleic acid, or a partial C_1 to C_4 or partial-(hydroxy-substituted C_1 to C_4 alkyl) maleate with (2) about 90 to 10 mole % of a vinyl lactam, of the formula:



wherein A represents 2, 3 or 4 atoms selected from the group consisting of carbon, nitrogen, oxygen and sulfur atoms; a vinyl ester of a C_2 to C_6 mono carboxylic acid; or a C_1 to C_4 alkyl vinyl ether; or mixtures thereof or of (1).

4,265,779

SUDS SUPPRESSING COMPOSITIONS AND DETERGENTS CONTAINING THEM

Daniel Gandolfo, Levallois Perret, France, and David J. Cooper, Wezembeek-Oppem, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 4, 1979, Ser. No. 72,254

Claims priority, application United Kingdom, Sep. 9, 1978, 36242/78

Int. Cl.³ C11D *7/24, 7/16;* B01D *19/04*

U.S. Cl. 252—135 9 Claims

1. A particulate suds suppressing composition comprising a ternary mixture of:

(a) a substantially water-insoluble hydrocarbon which is a member selected from the group consisting of aliphatic, alicyclic, aromatic and heterocyclic saturated or unsaturated hydrocarbons having from about 12 to about 40 carbon atoms and which is liquid at room temperature and atmospheric pressure;

(b) a nonionic ethoxylate having an HLB in the range from 14 to 19; and

(c) a compatibilizing agent which is a member selected from the group consisting of urea, thiourea, desoxycholic acid, the water-soluble salts of desoxycholic acid, α-cyclodextrin, β-cyclodextrin, 4,4'-dinitrobiphenyl and mixtures thereof;

the weight ratio of component (a) to component (b) being in the range from 5:1 to 1:4 and that of components (a)+(b) together to component (c) being in the range from 20:1 to 1:2.

4,265,780

PROCESS FOR CLEANING OF TIN-PLATED STEEL CANS

Masao Kimura; Tamotu Sobata, and Hideo Wada, all of Neyagawa, Japan, assignors to Nippon Paint Co., Ltd., Japan

Filed Feb. 8, 1980, Ser. No. 119,776

Claims priority, application Japan, Feb. 15, 1979, 54-16834

Int. Cl.³ C23G *1/14, 1/18;* C11D *7/06*

U.S. Cl. 252—156 2 Claims

1. A process for cleaning a tin-plated steel can by washing its surface with an alkaline solution comprising an alkaline builder in an amount sufficient to clean the surface, wherein the alkaline solution additionally comprises at least one of esters of myoinositol with 2 to 6 molecules of phosphoric acid and their alkali metal salts, alkaline earth metal salts, ammonium salts and amine salts in a concentration of not lower than 0.05 g/l and has a pH of 8 to 13.

4,265,781

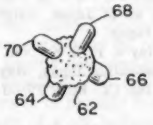
LOW DENSITY SPRAY DRIED PRODUCT

William S. Gross, West Caldwell; Edward J. Gibbons, Fanwood, and Joseph B. Wraga, Secaucas, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 944,380, Sep. 21, 1978, abandoned, which is a continuation of Ser. No. 844,860, Oct. 25, 1977, abandoned, which is a continuation of Ser. No. 614,461, Sep. 18, 1975, abandoned. This application Oct. 1, 1979, Ser. No. 80,836

Int. Cl.³ C11D *17/06, 17/00*

U.S. Cl. 252—174 5 Claims



1. A low density spray dried product comprising a body in the form of an irregular shaped bead having a plurality of spaced nodules protruding therefrom.

4,265,782

DETERGENT COMPOSITION

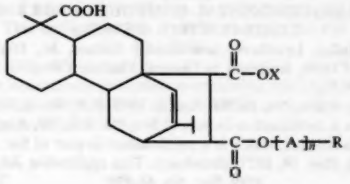
David P. Armstrong, Parsippany, and Robert J. Verdicchio, Succasunna, both of N.J., assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Sep. 25, 1979, Ser. No. 78,633

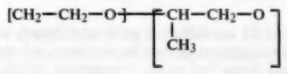
Int. Cl.³ C11D *10/02, 1/94*

U.S. Cl. 252—174.19 9 Claims

1. A detergent composition wherein the active surfactant ingredients consist essentially of from about 1 to 30% by weight of the total composition of a modified rosin ester of the formula



wherein R is hydrogen, alkyl containing from about 8 to 22 carbon atoms, hydroxyalkyl containing from about 8 to 22 carbon atoms, sorbitan monoesters of fatty acids containing from 8 to 22 carbon atoms or alkyl phenoxy containing from about 8 to 22 carbon atoms; X is hydrogen or an alkali metal salt; A is $CH_2—CH_2—O$ or



and n is an integer from 4; and from about 0.5 to 30.0% by weight of the total composition of at least one additional surfactant selected from the group consisting of anionic, nonionic, cationic and amphoteric surfactants with the proviso that the total amount of active surfactant ingredients should not be greater than about 40% by weight of the total composition and the proviso that the total amount of anionic and amphoteric surfactants should not be greater than about 20% by weight of the total composition.

4,265,783

STABILIZATION OF POLYETHER POLYOLS AND POLYURETHANE FOAMS PREPARED THEREFROM

Kenneth J. Hinze, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 21, 1980, Ser. No. 141,853

Int. Cl.³ C08G *18/14*

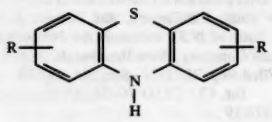
U.S. Cl. 252—182 9 Claims

1. In a polyether polyol or mixture of polyether polyols stabilized against oxidative degradation with a stabilizing quantity of a synergistic antioxidant composition containing

(A) from about 15 to about 85 percent by weight of a hindered phenolic antioxidant and

(B) from about 85 to about 15 percent by weight of 4,4'-bis-(α,α-dimethylbenzyl)diphenyl amine;

the improvement which comprises replacing a portion of either of the components (A) or (B) or a portion of both of the components (A) and (B) with from about 25 to about 1000 parts per million parts by weight of polyether polyol of a phenothiazine compound represented by the formula



wherein each R is independently hydrogen or an alkyl group having from 1 to about 12 carbon atoms.

4,265,784

AZINE LIQUID CRYSTAL COMPOUNDS FOR USE IN LIGHT-CONTROL DEVICES

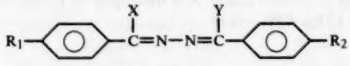
Hugh Mailer, Lyndhurst, and Stanley Laskos, Jr., Diamond, both of Ohio, assignors to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 26,781, Apr. 3, 1979, Pat. No. 4,196,975, which is a continuation-in-part of Ser. No. 937,507, Aug. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 861,954, Dec. 19, 1977, abandoned. This application Jul. 27, 1979, Ser. No. 61,376

Int. Cl.[3] C09K *3/34*; G02F *1/13*

U.S. Cl. 252—299 **7 Claims**

1. A liquid crystal material comprising an azine having the general formula:



wherein R_1 and R_2 are different para-substituents whereby to produce an asymmetrical molecular structure, wherein R_1 and R_2 are selected from the group comprising cyano, halogen, alkyl, and substituted alkyl radicals in which the alkyl radical has from one to nine carbon atoms, and at least one of the R_1 and R_2 radicals is alkyl or substituted alkyl when the other radical is halogen or cyano, and wherein X and Y are selected from the group consisting of hydrogen and methyl radicals, said azine having a transition temperature from its nematic phase to its isotropic liquid phase of at least about 50° C. and a melting point from its crystalline phase to a liquid crystal phase of no higher than about 75° C.

4,265,785

POLYMERIZATION CATALYST

Umberto Giannini; Paolo Longi; Domenico Deluca, and Angelo Pricca, all of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation of Ser. No. 963,179, Nov. 24, 1978, abandoned, which is a continuation of Ser. No. 814,936, Jul. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 530,205, Dec. 6, 1974, abandoned, which is a continuation of Ser. No. 167,872, Jul. 30, 1971, abandoned. This application Aug. 10, 1979, Ser. No. 65,430

Claims priority, application Italy, Jul. 31, 1970, 28131 A/70

Int. Cl.[3] C08F *4/02, 4/64*

U.S. Cl. 252—429 B **4 Claims**

1. In the preparation of components of catalysts for the polymerization of olefins comprising (1) a Ti compound selected from the group consisting of halides, oxyhalides, haloalcoholates and alcoholates, supported on (2) an activated anhydrous Mg or Mn dihalide, the improvement of supporting said Ti compound (1) on a mixture of the anhydrous Mg or Mn dihalide (2) and (3) an anhydrous compound of silicium or boron or of a metal belonging to one of Groups III or IV of the Mendelyeev Periodic Table, in an amount of from 1 to 80 parts by weight per 100 parts of the total mixture of (2) and (3), said compound (3) being selected from the group consisting of aluminum oxide, silicium oxide, tin oxides, titanium dioxide, zirconium dioxide, aluminum sulphate, titanyl sulphate, aluminum stearate, tin basic sulphate, lead sulphate, aluminum phosphate and boric anhydride, said Ti-containing component supported on (2) and (3) having a surface area exceeding 3 m^2/g or an X-rays powder spectrum which does not show the most intense diffraction lines as they appear in the X-rays powder spectrum of normal Mg or Mn dihalides, and anhydrous compound (3) being one which does not interact with the active Mg or Mn dihalide to a substantial extent which would alter the activity of the activated Mg or Mn dihalide.

4,265,786

REFORMING WITH MULTIMETALLIC CATALYSTS

Paul E. Eberly, Jr.; Charles H. Mauldin, and William C. Baird, Jr., all of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jun. 29, 1979, Ser. No. 53,375

Int. Cl.[3] B01J *27/02*

U.S. Cl. 252—439 **12 Claims**

1. A reforming catalyst which comprises from about 0.1 to about 2 percent platinum, from about 0.01 to about 0.1 percent copper, from about 0.001 to about 3 percent selenium, and from about 0.1 to about 2.5 percent halogen, composited with an inorganic oxide support.

4,265,787

CRACKING CATALYST

Albert B. Schwartz, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 642,884, Dec. 22, 1975, which is a continuation-in-part of Ser. No. 399,008, Sep. 20, 1973, abandoned, and a continuation of Ser. No. 440,890, Feb. 4, 1974, abandoned. This application Apr. 17, 1978, Ser. No. 897,077

Int. Cl.[2] B01J *29/06*

U.S. Cl. 252—455 Z **28 Claims**

1. A solid, acid, porous hydrocarbon cracking catalyst that contains about 0.01 to 100 parts per million, based on said catalyst, of at least one metal of the group consisting of platinum, palladium, iridium, osmium, rhodium, ruthenium and rhenium in a form inherently capable of dehydrogenating gas oil; which catalyst has substantial activity to catalyze the endothermic cracking, in a cracking zone, of gas oil boiling range hydrocarbons at elevated temperatures and in the absence of added hydrogen, with concomitant deactivation during said cracking by reason of the deposition of coke thereon, in an amount not substantially higher than the amount of coke, based upon feed, which would have been deposited on said catalyst under the same operating conditions in the absence of said incorporated metal; which catalyst in its coked condition is adapted to be transported to a regeneration zone and therein, in combination with sufficient oxygen, to be exothermically regenerated and heated by burning coke thereoff to produce a heated, reactivated catalyst and a flue gas having a higher ratio of carbon dioxide to carbon monoxide than said flue gas would have using said catalyst without said metal; and which heated, reactivated catalyst is adapted to be returned to said cracking zone.

4,265,788

ADSORBENT FOR SEPARATING PARA-XYLENE, AND PROCESS FOR THE PREPARATION THEREOF

Atsushi Ebitani, Kamakura; Takehisa Inoue, Tokyo, and Kazuo Tsunoi, Kamakura, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 4, 1979, Ser. No. 36,157

Claims priority, application Japan, May 9, 1978, 53-54735

Int. Cl.[3] B01J *29/08*

U.S. Cl. 252—455 Z **11 Claims**

1. An adsorbent for separating para-xylene from C_8 aromatic hydrocarbons, comprising a faujasite zeolite which contains:

(a) potassium ion;

(b) zirconium ion; and

(c) hydrogen ion or ammonium ion as cations.

2. The adsorbent according to claim 1, wherein said cations are cation exchanged and wherein the degree of cation exchange for each cation is:

K About 60–96%

Zr About 2–25% and

H or NH_4 About 2–25%, based on the total exchangeable cation sites originally present.

4,265,789

CONDUCTIVE POLYMER PROCESSABLE AS A THERMOPLASTIC

Phillips Christopherson, Sterling, and Rene Aelion, Concord, both of Mass., assignors to Polymer Cencentrates, Inc., Clinton, Mass.

Filed Oct. 22, 1979, Ser. No. 86,741
Int. Cl.³ H01B 1/06
U.S. Cl. 252—511 **17 Claims**

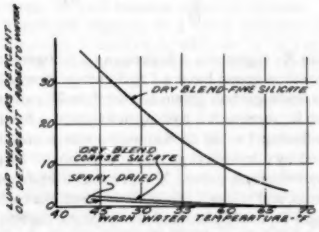
1. A flexible conductive plastic composite processable as a thermoplastic resin by injection molding or extrusion and having a volume resistivity of less than 10 ohm per cm, a Brabender torque of less than 1500 meter per grams at a temperature of 20° C. above melt, a minimum elongation at break of 50% and a brittleness temperature at failure of less than −10° C., the composition comprising a matrix of two phases, one an elastomeric amorphous polymer of glass transition temperature of less than 10° C., the other phase a crystalline polymer or copolymer with a glass transition temperature above 25° C., the two phases being bound together, the crystalline phase comprising less than 60% of the total of the two phases by mole concentration, and a dispersion in said two phase matrix of conductive particles characterized by a volume resistivity of 0.01 to 1 ohm/cm and a dibutylphthalate/oil absorption of at least 150 cc per 100 grams and comprising as a percentage by weight of the composite of 15% to 75%.

4,265,790

METHOD OF PREPARING A DRY BLENDED LAUNDRY DETERGENT CONTAINING COARSE GRANULAR SILICATE PARTICLES

Anthony E. Winston, East Brunswick; Francis R. Cala, North Brunswick; Stephen P. Lengyel, Bridgewater; Lawrence Kirschner, Flanders, and Dragomir Bracilovic, Edison, all of N.J., assignors to Church & Dwight Co., Inc., Piscataway, N.J.

Filed Aug. 9, 1979, Ser. No. 65,203
Int. Cl.³ C11D 17/06, 3/08, 3/10
U.S. Cl. 252—532 **6 Claims**



1. A method of substantially completely preventing the formation of undissolved laundry detergent masses in cold wash water having a temperature of the order of about 35° F. to about 75° F., said laundry detergent being a dry blended carbonate detergent formulation of finely-divided powders and containing unhydrated or partially hydrated builder salts; from 2–10% by weight of a pH buffering or pH lowering compound; and from 5–20% by weight of a synthetic anionic, nonionic, amphoteric or zwitterionic detergent active compound;

said method consisting essentially in adding from about 3 to about 25 percent by weight of coarse, hydrous granular water soluble silicate particles of which

about 100% pass a 10 mesh screen, about 95% are retained on a 100 mesh and no greater than about 4% pass through a 100 mesh screen, and wherein

the ratio of SiO_2:Na_2O in said silicate is in the range of about 1:1 to about 3.5:1.

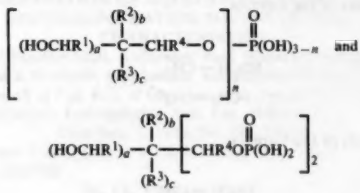
4,265,791

NOVEL PHOSPHORIC ACID

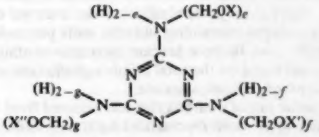
Richard R. Nicholson; Ray E. Smith, and Jayendra G. Shukla, all of Ann Arbor, Mich., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Division of Ser. No. 939,629, Sep. 5, 1978, Pat. No. 4,205,022. This application Dec. 6, 1979, Ser. No. 101,323
Int. Cl.³ C09K 3/28
U.S. Cl. 252—8.1 **5 Claims**

1. An intumescent composition consisting essentially of from about 8 to about 55 percent by weight of a compound selected from the group consisting of:



wherein a, b, c, and n are integers; a is from 1 to 3; b and c are independently selected from the group consisting of 0 and 1; n is selected from the group consisting of 1 and 2; R^1 and R^4 are independently selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and haloalkyl of 1 to 4 carbon atoms and 1 to 2 halogen atoms; and R^2 and R^3 are independently selected from the group consisting of haloalkyl containing 1 to about 4 carbon atoms and 1 to about 2 halogen atoms selected from the group consisting of chlorine, bromine, and mixtures thereof; from about 20 to about 40 percent by weight of water, and from about 10 to about 70 percent by weight of a cyclic nitrogen compound of the formula



wherein e, f, and g are integers selected from the group consisting of 1 and 2, e plus f plus g equal about 3 to 6, and X, X′, and X″ are independently selected from the group consisting of hydrogen and $—CH_3$.

4,265,792

COMPOSITIONS INCLUDING MERCAPTOORGANOPOLYSILOXANES AND STANNIC SALTS OF CARBOXYLIC ACIDS

Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

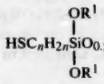
Filed Dec. 3, 1979, Ser. No. 99,299
Int. Cl.³ C08L 91/00
U.S. Cl. 260—18 S **7 Claims**

1. A composition of matter comprising a material prepared by mixing

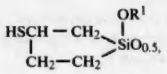
(A) a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units,

trimethylsiloxane units, hydroxydimethylsiloxane units, units of the formula

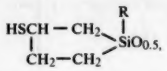
units of the formula



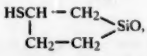
units of the formula



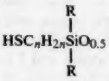
units of the formula



units of the formula

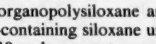


and units of the formula

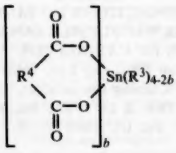


wherein: R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radicals; R^1 is methyl or ethyl; and, n has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of at least two mercapto-containing siloxane units per molecule and no more than 10 mole percent mercapto-containing siloxane units based on the total number of siloxane units in the mercaptoorganopolysiloxane;

(B) a stannic salt of a carboxylic acid selected from the group consisting of those represented by the formula



wherein: R^2 is a monovalent acyl radical; R^3 is a monovalent hydrocarbon radical; and a has a value of from 1 to 4 inclusive, and those represented by the formula



wherein: R^3 is defined above; R^4 is a divalent hydrocarbon radical; and b is 1 or 2, said stannic salt being present in an amount sufficient to provide at least 1/a stannic salt molecules per mercaptoorganopolysiloxane molecule or at least 1/2b stannic salt molecules per mercaptoorganopolysiloxane molecule; and

(C) a filler in an amount of from 0 to 200 parts by weight per 100 parts by weight of (A).

4. The composition according to claim 1 in which (B) is dibutyltindilaurate.

4,265,793

CATHODE-PRECIPITATING ELECTRODEPOSITION COATING COMPOSITION

Hiroyoshi Omika, Yokohama; Hajime Hara, Fujisawa; Yutaka Otsuki, Yokohama; Yoshihiko Araki, Kawasaki, and Kazuho Aoyama, Tokyo, all of Japan, assignors to Nippon Oil Company, Ltd., Japan

Filed Oct. 26, 1979, Ser. No. 88,653

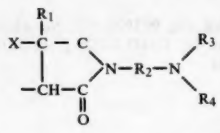
Claims priority, application Japan, Nov. 1, 1978, 53-133772; Sep. 17, 1979, 54-117857

Int. Cl.[3] **C08G** *59/50;* **C09D** *5/40;* **C25D** *13/06*

U.S. Cl. 260—23 EP **8 Claims**

1. A coating composition for cathode-precipitating electrodeposition consisting essentially of

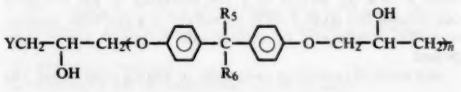
(A) 100 parts by weight of an unsaturated organic compound having a molecular weight of 300 to 5,000 containing a carbon-carbon double bond in an amount corresponding to an iodine value of 100 to 500, said unsaturated organic compound being selected from the group consisting of (a) a polymer of a conjugated diolefin containing 4 to 8 carbon atoms, (b) a copolymer of at least two conjugated diolefins containing 4 to 8 carbon atoms, (c) a copolymer of at least one conjugated diolefin containing 4 to 8 carbon atoms and a vinyl monomer having ethylenic unsaturation containing 2 to 20 carbon atoms, (d) a natural oil, (e) a natural fat and (f) a petroleum resin produced by cationic polymerization of petroleum cracking fractions containing 4 to 10 carbon atoms with a Friedel-Crafts catalyst, said unsaturated organic compound having bonded thereto, through a carbon-carbon bond, basic groups of the formula



wherein R_1 represents a hydrogen or halogen atom or a hydrocarbon group having 1 to 3 carbon atoms, R_2 represents a hydrocarbon group having 1 to 20 carbon atoms, R_3 and R_4 represent a hydrogen atom or a hydrocarbon group having 1 to 20 carbon atoms which may be partly replaced by a hydroxyl group, at least one of R_3 and R_4 is said hydrocarbon group, X represents a hydrogen atom, or a bond, and when X represents a bond, the carbon atom to which R_1 is attached and the adjacent carbon atom to which hydrogen is attached may form a part of the main chain,

the amount of said basic groups in said component (A) being 0.05 to 0.5 mole per 100 g of said component (A), and

(B) 3 to 100 parts by weight of at least one compound represented by the general formula



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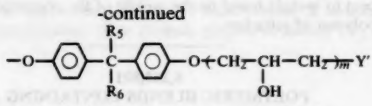
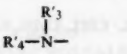


wherein R_5 and R_6, independently from each other, represent a hydrogen atom or an alkyl group having 1 to 10 carbon atoms, n is an integer of from 0 to 20, m is 1 or 0, Y is a group of the formula



in which R'_3 represents an organic radical having 1 to 10 carbon atoms and R'_4 represents a hydrogen atom or an organic radical having 1 to 10 carbon atoms, a residue of a carboxylic acid having 1 to 20 carbon atoms, or a residue of a phenolic compound having 6 to 20 carbon atoms, and Y' represents a hydrogen atom when m is O and Y when m is 1,

said component (A) and said component (B) being neutralized with an organic acid or an inorganic acid and dissolved or dispersed in water.

4,265,794

MOLDABLE MIXTURE OF SACRIFICIAL BINDER AND SINTERABLE PARTICULATE SOLIDS

Robert A. Pett, Franklin; V. Durga N. Rao, Bloomfield Township, Oakland County, and S. Burhan A. Qaderi, Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 905,316, May 12, 1978, abandoned, which is a division of Ser. No. 810,464, Jun. 27, 1977, Pat. No. 4,158,689, which is a continuation-in-part of Ser. No. 644,779, Jan. 1, 1976, abandoned. This application Aug. 10, 1979, Ser. No. 65,702

The portion of the term of this patent subsequent to Jun. 19, 1996, has been disclaimed.

Int. Cl.[3] **C08L** *91/00*

U.S. Cl. 260—28.5 R **5 Claims**

1. In a moldable mixture for preparing sintering articles which consists essentially of about 30 to about 70 volume percent of sinterable particulate solids and about 70 to about 30 volume percent of an organic sacrificial binder, the improvement wherein said organic sacrificial binder consists essentially of an intimate mixture of about 10 to about 90 parts by weight of resinous material and about 90 to about 10 parts by weight of a plasticizer for said resinous material wherein

(1) said resinous material is a block polymer having the structural formula $AB(AR)_\eta A$, wherein "η" is 0 or a positive integer, "A" is a linear or branched polymer that is glassy or crystalline at 20°–25° C., has its softening point in the range of about 80° to about 250° C. and "B" is a polymer of different chemical composition than A that behaves as an elastomer at temperatures between about 15° C. below the softening point of A and about 100° C. above the softening point of A, and

(2) said plasticizer is selected from the group consisting of

(a) an oil at least 75 percent by weight of which boils in the range of about 550° F. to about 1038° F., has viscosity at 210° F. in the range of about 30 to about 220 Saybolt Universal Seconds and an aniline point in the range of about 170° F. to about 255° F.

(b) a wax melting at a temperature in the range of about 130° F. to about 170° F. at least 75 percent by weight of which boils at temperatures in the range of about 600° F. to about 900° F., and

(c) an oil in accordance with (a) and a wax in accordance with (b)

and wherein 0 to between 49 and 50 weight percent of said block polymer is replaced by a first replacement polymer meeting the limitations of polymer "A" in said structural formula, and 0 to about 49 and 50 weight percent of said block polymer is replaced with a second replacement polymer meeting the limitations of polymer "B" in said structural formula, the sum of said replacements of said block polymer comprising in combination less than 50 weight percent of said block polymer.

4,265,795

CATIONIC AMINE-FUNCTIONAL COPOLYMER MIXTURE WITH AMINOPLAST RESIN AND AQUEOUS BATHS CONTAINING THE SAME

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 20,688, Mar. 15, 1979, Pat. No. 4,198,495. This application Oct. 16, 1979, Ser. No. 85,199

Int. Cl.[3] **C08L** *61/12, 61/26*

U.S. Cl. 260—29.3 **12 Claims**

9. Cationic amine-functional copolymer mixtures as recited in claim 1 in which said copolymer is present in stable dispersion in water to provide a bath having a pH in excess of pH 5.0.

4,265,796

PREPARATION OF AQUEOUS POLYACRYLATE DISPERSIONS HAVING IMPROVED FLOW CHARACTERISTICS

Rudolf Mueller-Mall, Karlsruhe; Kurt Wendel, Ludwigshafen; Hans J. Geelhaar, Frankenthal, and Michael Melan, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 7, 1979, Ser. No. 73,300

Claims Priority, Application Fed. Rep. of Germany, Sept. 30, 1978, 2842719

Int. Cl.[3] **C08L** *33/08, 33/10*

U.S. Cl. 260—29.6 R **8 Claims**

1. In a process for the preparation of aqueous polyacrylate dispersions having improved flow characteristics by emulsion polymerizing at least 20 weight % of an ester of acrylic acid and/or methacrylic acid and an alkanol of 1 to 10 carbon atoms at from 30° to 95° C. in the presence of a free radical polymerization inhibitor, a protective colloid, from 0.5 to 5% by weight of a nonionic emulsifier and a molecular weight regulator, the percentages by weight each being based on the total amount of monomer, the improvement which comprises: admixing at least a portion of the protective colloid present in a total amount of 0.05 to 1.5% by weight and a portion of the water soluble molecular weight regulator present in a total amount of 0.1 to 0.5% by weight with from 10–30 weight % of the total number to form an initial charge, and admixing the remainder of the monomer and of the said water-soluble molecular weight regulator and any remainder of the protective colloid with said initial charge.

4,265,797

AEROSOL WATER-BASED PAINT COMPOSITION

Albert Suk, Richmond Hill, Canada, assignor to Conn Chem Group, Limited, Toronto, Canada

Continuation-in-part of Ser. No. 968,277, Dec. 11, 1978, abandoned. This application Nov. 26, 1979, Ser. No. 97,152

Int. Cl.[3] **C08K** *5/05*

U.S. Cl. 260—29.6 E **5 Claims**

1. An aerosol composition having a pH of about 7.2 to about 10 and suitable for spray application to a substrate surface and air drying to a continuous film thereon which has high gloss and excellent durability including high flexibility retention and high gloss retention, said composition consists essentially of:

(a) about 10 to about 30% by weight of at least one propellant,

(b) about 15 to about 35% by weight of at least one aliphatic monohydric alcohol of the formula: R-OH wherein R is an unsubstituted straight or branched chain alkyl group, and containing 1 to 4 carbon atoms,

(c) about 10 to about 45% by weight of water,

(d) about 8 to about 25% by weight of an insoluble film forming acrylic polymer in particulate form suspended in

said composition, said acrylic polymer consisting of a water-insoluble interpolymer of (A) units from at least one neutral free-radical polymerizable ester having a vinylidene group attached to the functional group, which ester by itself yields a soft linear polymer, (B) units from at least one polymerizable aromatic monovinylidene compound which by itself yields a hard polymer, and (C) units from at least one neutral polymerizable aliphatic monovinylidene compound substituted by a cyano group and which by itself yields a hard polymer,

(e) up to about 3% by weight of at least one surfactant present in an amount at least sufficient to maintain solids suspended in the liquid phase,

(f) 0 to about 15% by weight of a pigment,

(g) 0 to about 5% by weight of a coalescing solvent,

(h) 0 to about 1% by weight of a pH stabilizer,

(i) 0 to about 2% by weight of an antifoam agent, and

(j) 0 to about 2% by weight of a plasticizer.

4,265,798

ISOCYANURATE PRODUCTS AND POLYURETHANES THEREFROM

Anupama Mishra, Guelph, Canada, assignor to Uniroyal Ltd., Ontario, Canada

Filed Feb. 11, 1980, Ser. No. 120,027

Claims priority, application Canada, Jan. 28, 1980, 344509

Int. Cl.[3] **C08L** *75/04*

U.S. Cl. 260—32.4 **24 Claims**

1. A method of cyclotrimerizing an organic diisocyanate comprising contacting the organic diisocyanate with a small but effective amount of potassium salt of 2-pyrrolidinone as a cyclotrimerization catalyst, whereby the organic diisocyanate is cyclotrimerized to an isocyanurate-containing product soluble in organic solvents.

4,265,799

ALCOHOL-WET PARTICLES OF ETHYLENE-VINYL ESTER INTERPOLYMER

Dorothee M. McClain, Cincinnati, Ohio, assignor to National Distillers and Chemical Corp., New York, N.Y.

Division of Ser. No. 934,647, Aug. 17, 1978, Pat. No. 4,217,423. This application Sep. 24, 1979, Ser. No. 78,530

Int. Cl.[3] **C08K** *5/05*

U.S. Cl. 260—33.4 R **4 Claims**

1. Substantially aggregate-free alcohol-wet interpolymer particles produced by the process which comprises adding to an aqueous dispersion of finely divided particles of non-hydrolyzed ethylene-vinyl ester interpolymer containing at least about 30% by weight of copolymerized vinyl ester in admixture with a surface active dispersing agent, an anti-coalescing amount of a lower saturated aliphatic monohydroxyl alcohol accompanied by, or followed with, agitation prior to recovering the ethylene-vinyl ester interpolymer particles from the media and thereafter recovering the interpolymer particles from the media in the alcohol-wet condition.

3. A blend of free-flowing powder comprising particles of less than 500 microns of alcohol-wet ethylene-vinyl ester copolymer, said copolymer comprising at least about 30% by weight of combined vinyl ester units, and said alcohol being a lower saturated aliphatic monohydroxyl alcohol, with particulate polyvinyl chloride.

4,265,800

STABILIZED HEAT CURABLE SILICONE ELASTOMERS

Harry V. Newton, Tecumseh, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Filed Nov. 13, 1979, Ser. No. 93,368

Int. Cl.[3] **C08L** *83/04*

U.S. Cl. 260—37 SB **7 Claims**

1. A heat curable organopolysiloxane composition composed of an organopolysiloxane polymer, an organic peroxide curing agent, an amphorous silica filler and at least 0.005 percent by weight based on the weight of the organopolysiloxane polymer of tellurium.

4,265,801

POLYMERIC BLENDS CONTAINING A MONOORGANIC POLYSILOXANE RESIN

Anthony G. Moody, Stratton, and Richard J. Penneck, Lechlade, both of England, assignors to Raychem Limited, London, England

Filed Jul. 17, 1978, Ser. No. 925,238

Claims priority, application United Kingdom, Jul. 27, 1977, 31608/77

Int. Cl.[3] **C08L** *83/06, 67/02, 23/08*

U.S. Cl. 260—40 R **34 Claims**

1. A flame retarded, melt processable polymer composition, comprising a blend of (a) non-silicone polymer that is an elastomer or a thermoplastic polymer, (b) solid, non-elastomeric, monoorganic polysiloxane resin comprising at least 80% by weight of polymerized units of the formula $RSiO_{1.5}$ where R is hydrogen or an organic group, at least 85% of the R groups being organic groups, the non-silicone polymer and the monorganic siloxane resin being present in a weight ratio of from 10:1 to 1:1, wherein the monoorganic polysiloxane resin has a number average molecular weight in the range of from 2000 to 6000 and a hydroxyl content of less than 2% by weight, and (c) an effective amount of filler providing enhanced fire retardant properties.

4,265,802

POLYESTER OF PARA-HYDROXY BENZOIC ACID, 1,4-BIS(PARA-CARBOXYPHENOXY) BENZENE, AROMATIC DIOL AND AROMATIC DIACID CAPABLE OF UNDERGOING MELT PROCESSING

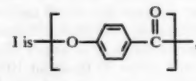
Eui W. Choe, Morris, N.J., assignor to Celanese Corporation, New York, N.Y.

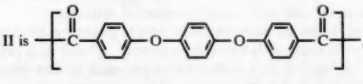
Filed Jan. 4, 1980, Ser. No. 109,573

Int. Cl.[3] **C08G** *63/60, 63/66*

U.S. Cl. 260—40 P **26 Claims**

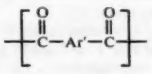
1. A melt processable wholly aromatic polyester capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of the recurring moieties I, II, III, and IV wherein:

I is  ,

II is  ,

III is a dioxy aryl moiety of the formula —O—AR—O— where Ar is a divalent radical comprising at least one aromatic ring wherein at least one hydrogen atom present upon an aromatic ring optionally may be substituted with methyl, chloro, bromo, phenyl, alkoxy having 1 to 4 carbon atoms, and mixtures of the foregoing, and

IV is a dicarboxy aryl moiety of the formula



where Ar' is a divalent radical comprising at least one aromatic ring wherein at least one hydrogen atom present upon an aromatic ring optionally may be substituted with methyl, chloro, bromo, phenyl, alkoxy having 1 to 4 carbon atoms, and mixtures of the foregoing,

and wherein said polyester comprises approximately 30 to 60

mole percent of moiety I, approximately 10 to 30 mole percent of moiety II, approximately 20 to 35 mole percent of moiety III, and approximately 10 to 25 mole percent of moiety IV.

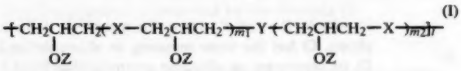
4,265,803

POLYMERS CONTAINING POLYALKYLPIPERIDINES AND USE THEREOF AS STABILIZERS

Nobuo Soma; Syoji Morimura; Takao Yoshioka, and Tomoyuki Kurumada, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

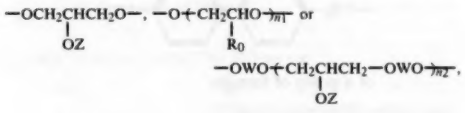
Filed Aug. 7, 1978, Ser. No. 931,535
Claims priority, application Japan, Aug. 8, 1977, 52/94808
Int. Cl.[3] C08L 23/00; C08G 73/06; C07D 221/00, 221/20
U.S. Cl. 260—45.8 NZ 27 Claims

1. A polymer represented by the formula (I):

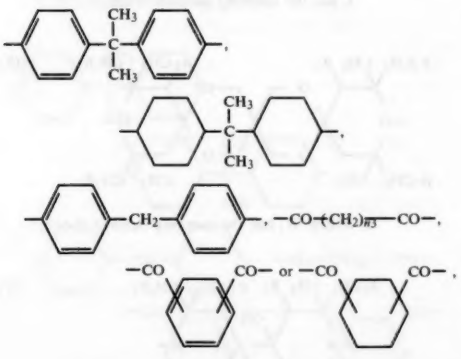


(I)

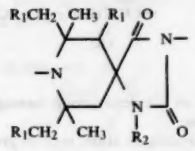
wherein;
l is an integer of from 2 to 50,
m_1 and m_2 are 0, or one of them is 1 and another is 0,
X represents a group of formula



in which:
R_0 is hydrogen atom or methyl group,
n_1 is an integer of from 1 to 10,
n_2 is 0 or an integer of from 1 to 10,
W represents a group of formula

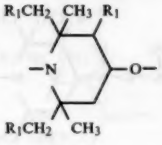


in which n_3 is an integer of from 1 to 10, and,
Z has the meaning defined below,
Y represents, when m_1 and m_2 are 0, a group of following formulae II to IV:



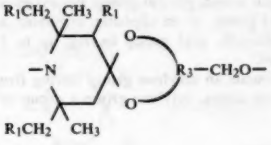
(II)

in which:
R_1 represents hydrogen atom or methyl group,
R_2 represents hydrogen atom or an alkyl group having from 1 to 18 carbon atoms,



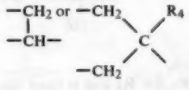
(III)

in which:
R_1 has the meaning defined above,

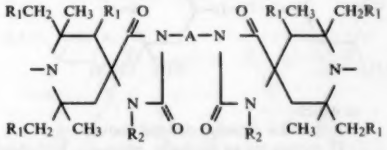


(IV)

in which:
R_1 has the meaning defined above,
R_3 represents a group of formula

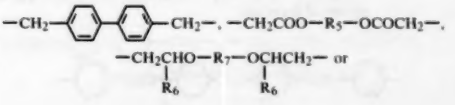


in which,
R_4 represents methyl group or ethyl group, and, Y represents, when one of m_1 and m_2 is 1 and another is 0, a group of following formulae V to XI:



(V)

in which:
R_1 and R_2 have the meanings defined above,
A represents an alkylene group having from 2 to 12 carbon atoms, xylylene group, a group of formula



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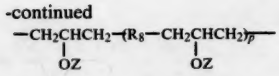


in which,

R_5 represents an alkylene group having from 2 to 8 carbon atoms,

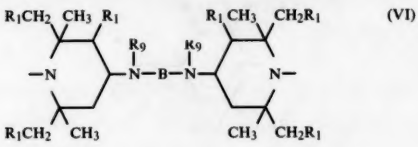
R_6 represents hydrogen atom, methyl group or phenyl group,

R_7 represents an aliphatic, aromatic or alicyclic diacyl group having up to 12 carbon atoms,

R_8 has the same meaning as above defined X,

p is 0 or 1, and

Z has the meaning defined below,



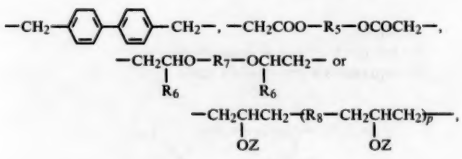
(VI)

in which:

R_1 has the meaning defined above,

R_9 represents an alkyl group having from 1 to 18 carbon atoms, phenyl group, benzyl group, cyclohexyl group, or an aliphatic, aromatic, araliphatic or alicyclic acyl group having up to 18 carbon atoms,

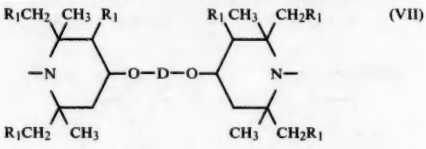
B represents an alkylene group having from 2 to 10 carbon atoms, xylylene group a group of formula



in which,

R_5, R_6,R_7, R_8 and p have the meanings defined above, and

Z has the meaning defined below,

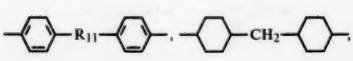


(VII)

in which:

R_1 has the meaning defined above,

D represents an aliphatic, aromatic, araliphatic or alicyclic diacyl group having up to 36 carbon atoms or a group of formula —CONH—R_{10}—NH-CO— in which, R_{10} represents an alkylene group having from 2 to 10 carbon atoms, a phenylene group optionally substituted with methyl, a napthylene group, a xylylene group, a cyclohexylene group optionally substituted with methyl, a group of formula



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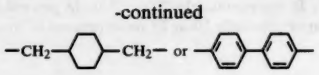
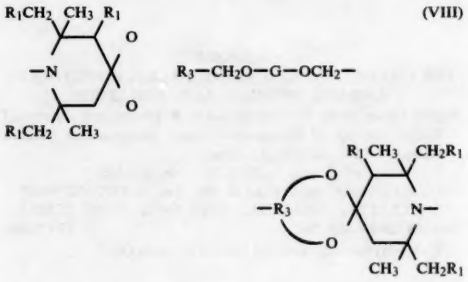


in which,

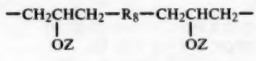
R_{11} represents oxygen atom or methylene group,



(VIII)

in which: R_1 and R_3 have the meanings defined above, G has the same meaning as above-defined D, or represents an alkylene group having from 3 to 10 carbon atoms, a xylylene group, a group of formula

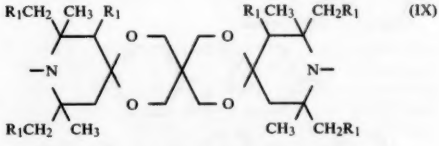
or a group of formula



in which,

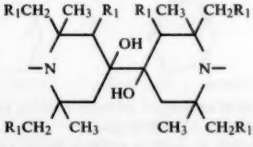
R_8 has the meaning defined above, and,

Z has the meaning defined below,



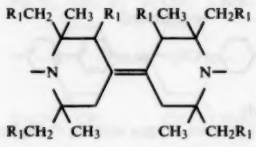
(IX)

in which: R_1 has the meaning defined above,



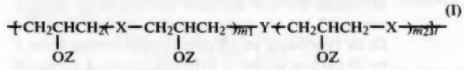
(X)

in which: R_1 has the meaning defined above,


(XI)

in which: R_1 has the meaning defined above, and, all of Z in the molecule represent hydrogen atom, an alkyl group having from 1 to 18 carbon atoms, an aliphatic, aromatic, araliphatic or alicyclic acyl group having up to 18 carbon atoms or a group of formula —CONHR$_{12}$ in which, R_{12} represents an alkyl group having from 1 to 18 carbon atoms, phenyl group or cyclohexyl group, or a part of Z represent hydrogen atom and the remaining Z represent above-defined groups other than hydrogen atom.

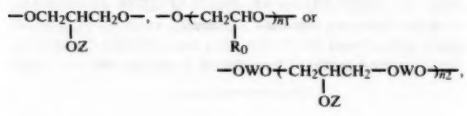
16. A synthetic polymer composition stabilized against light- and heat degradation thereof, which is characterized in that there is incorporated into a synthetic polymer to be stabilized from 0.01 to 5.0% by weight of said synthetic polymer of at least one polymer represented by the formula (I):


(I)

wherein;

l is an integer of from 2 to 50,

m_1 and m_2 are 0, or one of them is 1 and another is 0, X represents a group of formula



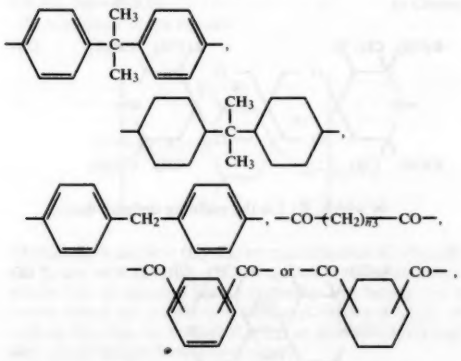
in which:

R_0 is hydrogen atom or methyl group,

n_1 is an integer of from 1 to 10,

n_2 is 0 or an integer of from 1 to 10,

W represents a group of formula

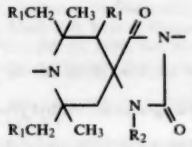


in which

n_3 is an integer of from 1 to 10, and,

Z has the meaning defined below,

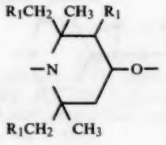
Y represents, when m_1 and m_2 are 0, a group of following formulae II to IV:


(II)

in which:

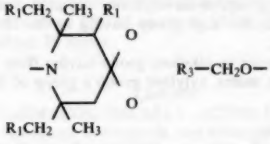
R_1 represents hydrogen atom or methyl group,

R_2 represents hydrogen atom or an alkyl group having from 1 to 18 carbon atoms,


(III)

in which:

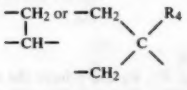
R_1 has the meaning defined above,


(IV)

in which

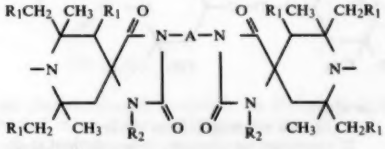
R_1 has the meaning defined above,

R_3 represents a group of formula



in which,

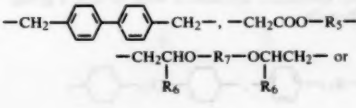
R_4 represents methyl group or ethyl group, and, Y represents, when one m_1 and m_2 as 1 and another is 0, a group of following formulae V to XI:


(V)

in which:

R_1 and R_2 have the meanings defined above,

A represents an alkylene group having from 2 to 12 carbon atoms, xylylene group, a group of formula



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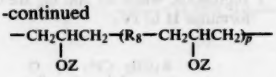


in which,

R_5 represents an alkylene group having from 2 to 8 carbon atoms,

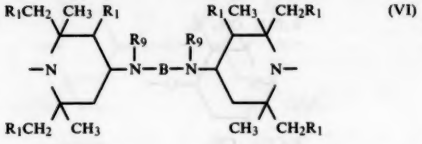
R_6 represents hydrogen atom, methyl group or phenyl group,

R_7 represents an aliphatic, aromatic or alicyclic diacyl group having up to 12 carbon atoms,

R_8 has the same meaning as above defined X,

p is 0 or 1, and

Z has the meaning defined below,



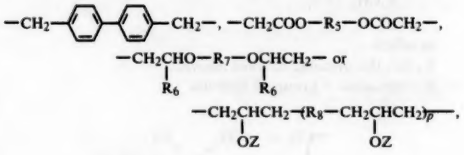
(VI)

in which:

R_1 has the meaning defined above,

R_9 represents an alkyl group having from 1 to 18 carbon atoms, phenyl group, benzyl group, cyclohexyl group, or an aliphatic, aromatic, araliphatic or alicyclic acyl group having up to 18 carbon atoms,

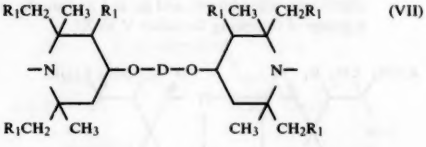
B represents an alkylene group having from 2 to 10 carbon atoms, xylylene group a group of formula



in which,

R_5, R_6, R_7, R_8 and p have the meanings defined above, and

Z has the meaning defined below,

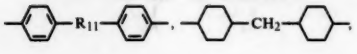


(VII)

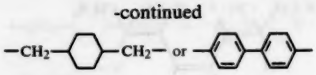
in which

R_1 has the meaning defined above,

D represents an aliphatic, aromatic, araliphatic or alicyclic diacyl group having up to 36 carbon atoms or a group of formula —CONH—R_{10}—NH-CO— in which, R_{10} represents an alkylene group having from 2 to 10 carbon atoms, a phenylene group optionally substituted with methyl, a naphthylene group, a xylylene group, a cyclohexylene group optionally substituted with methyl, a group of formula

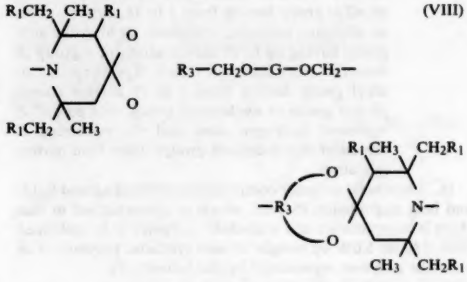


-continued



in which,

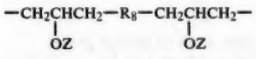
R_{11} represents oxygen atom or methylene group,



(VIII)

in which: R_1 and R_3 have the meanings defined above, G has the same meaning as above-defined D, or represents an alkylene group having from 3 to 10 carbon atoms, a xylylene group, a group of formula

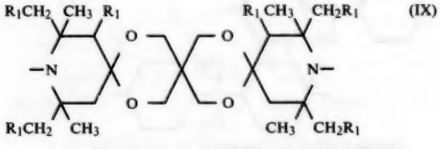
or a group of formula



in which,

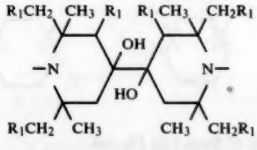
R_8 has the meaning defined above, and,

Z has the meaning defined below,



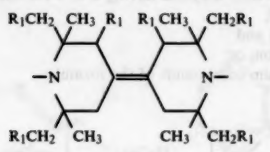
(IX)

in which: R_1 has the meaning defined above,



(X)

in which: R_1 has the meaning defined above,



(XI)

in which: R_1 has the meaning defined above, and, all of Z in the molecule represent hydrogen atom, an alkyl group having from 1to 18 carbon atoms, an aliphatic, aromatic, araliphatic or alicyclic acyl group having up to 18 carbon atoms or a group of formula —$CONHR_{12}$ in which, R_{12} represents an alkyl group having from 1 to 18 carbon atoms, phenyl group or cyclohexyl group, or a part of Z represent hydrogen atom and the remaining Z represent above-defined groups other than hydrogen atom.

4,265,804

ORIENTED POLYESTER ARTICLES HAVING IMPROVED ULTRAVIOLET STABILITY (III)

Joseph S. Zannucci, Kingsport, and John M. Wininger, Blountville, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 5, 1979, Ser. No. 1,112
Int. Cl.³ C08K *5/34, 5/35*
U.S. Cl. 260—45.8 NT **21 Claims**

1. A process for improving the weatherability and ultraviolet light stability of polyester objects comprising (1) forming said object from a polyester extrudable composition having an inherent viscosity of at least 0.4 and a 264 psi heat deflection temperature greater than 60° C. containing about 0.01 to about 10 percent by weight of at least one multichromophoric ultraviolet light stabilizer compatible with said polyester composition and (2) orienting said polyester object thereby improving the ultraviolet stability at least twice of said unoriented object.

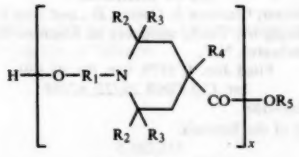
4,265,805

POLYMERIC LIGHT STABILIZERS CONTAINING TETRALKYL PIPERIDINE MOIETIES

Richard W. Thomas, Piscataway, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 1, 1980, Ser. No. 136,207
Int. Cl.³ C07D *401/14;* C08G *18/38;* C08K *5/34*
U.S. Cl. 260—45.8 N **14 Claims**

1. A polymer of the formula



wherein R_1 is alkylene (C_2–C_8) or cycloalkylene (C_5–C_6); R_2 and R_3 are each alkyl (C_1–C_8) or together with the carbon to which they are attached form a cycloalkyl ring having 5 or 6 carbon atoms; R_4 is hydrogen, hydroxyl, alkoxy (C_1–C_8), or acyloxy (C_1–C_8); R_5 is alkyl (C_1–C_8) or cycloalkyl (C_5–C_6); and, x is an integer from 4 to about 10.

6. A composition comprising a polymer normally subject to degradation by ultraviolet light and an ultraviolet stabilizingly effective amount of a polymer of claim 1.

4,265,806

FLAME RETARDANT THERMOPLASTIC SYNTHETIC RESIN

Raban Grundmann, and Günther Maahs, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,599
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1979, 2928349
Int. Cl.³ C08F *9/65;* C08K *5/34*
U.S. Cl. 260—45.8 NT **7 Claims**

1. A flame-retardant composition comprising a thermoplastic synthetic resin and an intumescent phosphorous-containing flame retardant prepared by the process comprising evaporating to dryness the reaction product of (a) 1 mole of phosphoric acid, phosphoric acid or polyphosphoric acid, (b) 0.5–2 moles of ethylene oxide or ethylene glycol, and (c) 0.2–1 mole of melamine, and tempering the thus-obtained solid at 100°–250° C.

4,265,807

DISPROPORTIONATION OF ROSIN IN THE PRESENCE OF DITHIIN DERIVATIVES

David S. Breslow, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jan. 22, 1980, Ser. No. 114,159
Int. Cl.³ C09F *1/04;* C07C *39/08*
U.S. Cl. 260—97.5 **16 Claims**

1. A method of disproportionating rosin comprising heating said rosin in the presence of a dithiin derivative at a temperature of from about 150° C. to about 300° C. for from about 1 hour to about 10 hours.

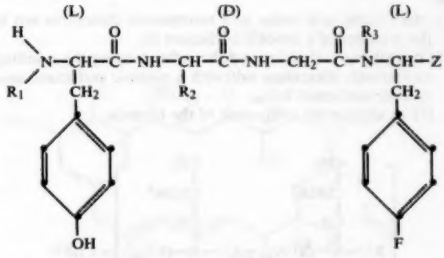
4,265,808

PHARMACOLOGICALLY ACTIVE PEPTIDES

Paul D. Gesellchen, Indianapolis, and Robert T. Shuman, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 17, 1979, Ser. No. 104,529
Int. Cl.³ C07C *103/52*
U.S. Cl. 260—112.5 R **29 Claims**

1. A compound of the formula



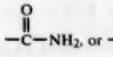
and pharmaceutically acceptable non-toxic acid addition salts thereof, in which L and D define the chirality;

R_1 is hydrogen or C_1–C_3 primary alkyl;

R_2 is C_1–C_4 primary or secondary alkyl, allyl, cyclopropylmethyl, C_1–C_2 hydroxyalkyl, or —$(CH_2)_m$—U—CH_3 in which U is —S— or >S—O and m is 1 or 2;

R_3 is hydrogen, C_1–C_4 primary or secondary alkyl, cyclopropylmethyl, allyl or propargyl; and

Z is —CH_2OR_4,



in which R_4 is hydrogen, acetyl, or acetoxymethyl and R_5 is C_1–C_3 alkyl.

4,265,809

METHOD OF MAKING EPOXIDE-LIGNIN RESINS

Dale B. Holsopple, 12908 Thraves Rd., Garfield Heights, Ohio 44125; Wasyl W. Kurple, 110 W. Grace Ave., Bedford, Ohio 44146; William M. Kurple, 16607 N. 34th Ave., Phoenix, Ariz. 85023, and Kenneth R. Kurple, 9533 Springborn Rd., Anchorville, Mich. 48004

Filed Sep. 4, 1979, Ser. No. 72,244
Int. Cl.[3] C07G *1/00*; C08L *97/00*
U.S. Cl. 260—124 R **24 Claims**

1. The method of producing unsaturated reactive end groups on lignin obtained by contacting aqueous waste black liquor from the kraft pulping process with an organic chemical solvent, and adding an acid to the mixture to lower the pH to thereby separate a layer which layer contains extracted or separated lignin in said organic solvent separate from an aqueous layer, wherein such method comprises either reacting the said separated layer of lignin in said organic solvent with a carbonyl compound containing active hydrogen and a compound selected from the group consisting of alpha, beta-unsaturated carbonyl compounds and acrylonitrile, or reacting said lignin in said organic solvent with a compound selected from the group consisting of cyanoacetic acid, esters of cyanoacetic acid, malonic acid and esters of malonic acid, to produce alpha, beta-unsaturated reactive end groups on said lignin which end groups are amenable to epoxidation.

4,265,810

PROCESS FOR RECOVERING ZWITTERIONIC DIAZONIUM SALTS BY AGGREGATION

Donald L. Bauman, Wilmington, Del., and Masuo Toji, Barnsboro, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

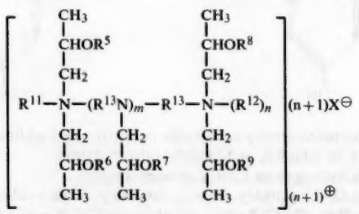
Continuation-in-part of Ser. No. 954,824, Oct. 26, 1978, abandoned. This application Jun. 6, 1980, Ser. No. 157,002
Int. Cl.[3] C07C *113/04*
U.S. Cl. 260—141 **22 Claims**

1. A process for recovering solid zwitterionic diazonium salts derived from diazotizable aromatic amines capable of forming zwitterionic diazonium salts which consists essentially in:

(a) diazotizing said amine to a zwitterionic diazonium salt in the presence of a cationic surfactant or

(b) diazotizing said amine and thereafter treating the resulting zwitterionic diazonium salt with a cationic surfactant, said cationic surfactant being

(1) an ammonium compound of the formula:



wherein

R^1–R^4 are alkyl containing 1–18 carbons, alkenyl containing 8–18 carbons, or benzyl; at least one of R^1–R^4 is a C_{10}–C_{18} alkyl or alkenyl; provided that no more than one of R^1–R^4 is benzyl;

R^5–R^9 are hydrogen or $R^{10}CO$—, at least two thereof being $R^{10}CO$—;

R^{10} is alkyl or alkenyl containing **11–17** carbons;

R^{11} and R^{12} are C_1–C_4 alkyl;

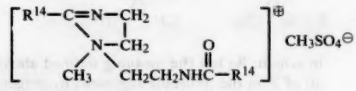
R^{13} is a bivalent alkylene having 2 to 6 carbons;

m is 0 to 2;

n is 0 or 1; and

$X^{\ominus}$ an anion; or

(2) imidazolium compounds of the formula:



wherein R^{14} is a C_{15}–C_{17} aliphatic hydrocarbon.

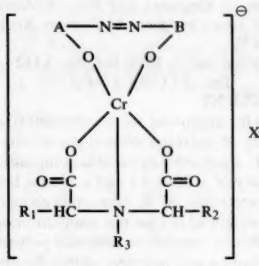
4,265,811

NOVEL AZO DYES

Elbert M. Idelson, West Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 8, 1979, Ser. No. 1,448
Int. Cl.[3] C09B *45/26, 45/16*
U.S. Cl. 260—147 **8 Claims**

1. A compound which is represented by the structural formula:



wherein A is a radical of benzene or naphthalene, B is a radical of benzene or naphthalene or a nitrogen containing heterocyclic radical, X is a cation, R_1 and R_2 may be H or when taken together may represent the carbon atoms necessary to complete a five or six member heterocyclic moiety and R_3 may be H or alkyl having from 1 to 6 carbon atoms.

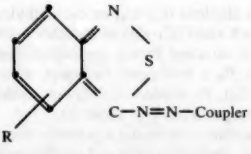
4,265,812

AZO DYES DERIVED FROM 3-AMINO-2,1-BENZISOTHIAZOLES AND AROMATIC AMINE COUPLERS CONTAINING SULFO GROUPS, OR SALTS THEREOF

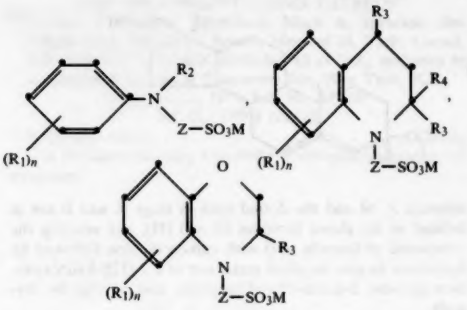
Max A. Weaver; Clarence A. Coates, Jr., and Jean C. Fleischer, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,439
Int. Cl.[3] C09B *29/22, 62/08*
U.S. Cl. 260—158 **6 Claims**

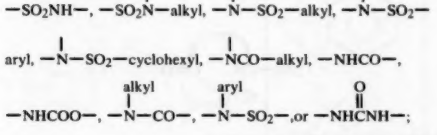
1. A dye of the formula:



wherein the Coupler is of the formulae



wherein R may be hydrogen or one to three substituents selected from lower alkyl, lower alkoxy, chlorine, bromine, iodine, lower alkylsulfonyl, sulfamoyl, and sulfamoyl substituted with lower alkyl; R_1 is selected from hydrogen, lower alkyl, aryl, alkylamino, 2-furyl, halogen, lower alkoxy, aryloxy, —NHCO—R_5 and —$NHSO_2$—R_5 wherein R_5 is selected from lower alkyl which may be substituted with hydroxy, lower alkoxy, cyano, aryloxy, aryl, halogen, cycloalkyl, lower alkylcarbonyloxy, or carbamoyl; R_2 is selected from hydrogen, aryl, cycloalkyl, and lower alkyl which may be substituted with alkoxy, alkoxyalkoxy, aryl, cycloalkyl, lower alkylcycloalkyl, 2-furyl, $NHCOR_5$, $NHSO_2R_5$, aryloxy, alkylcarbonyl, carbamoyl, lower alkyl substituted carbamoyl, cyano, alkanoyloxy, halogen, alkoxycarbonyl, succinimido, glutarimido, phthalimido, 2-pyrrolidono, sulfamoyl, lower alkyl substituted sulfamoyl, lower alkylsulfonamido, $NHSO_2$-aryl, NHCOO-alkyl, NHCONH-alkyl, formamido, alkylsulfonyl, arylsulfonyl, alkylthio, arylthio or SO_3M; R_2 may in conjunction with R_1 form a 1,2,3,4-tetrahydroquinoline or benzomorpholine derivative; n is 0, 1 or 2; M is Na^+, K^+, NH_4^+, or H^+; R_3 and R_4 are each selected from hydrogen or lower alkyl; Z is selected from straight or branched chain lower alkylene, lower alkylene substituted with aryl, aryloxy, alkoxy, halogen, aryloxy or SO_3M, $—CH_2(CH_2)_m—X—CH_2(CH_2)_p$, where m is 1, 2, or 3, p is 0, 1, 2, or 3, and X is O, S, SO_2,



and the various aryl groups may be substituted with lower alkyl, lower alkoxy, or halogen.

4,265,813

AZO DYESTUFFS

Horst Nickel, and Karl H. Schündehütte, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

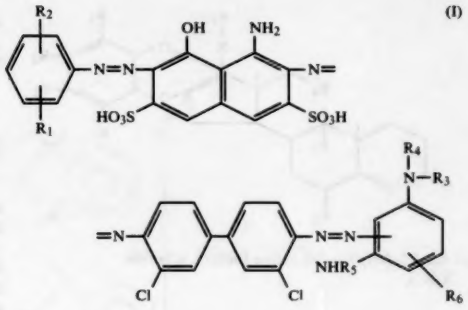
Filed Oct. 27, 1978, Ser. No. 955,493

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748719

Int. Cl.³ C09B *35/36*

U.S. Cl. 260—170 **5 Claims**

1. Dyestuffs which, in the form of the free acid, correspond to the formula



(I)

wherein

R_1 denotes hydrogen, methyl or chlorine,

R_2 denotes hydrogen, chlorine, acetylamino, methoxy, ethoxy, nitro or carboxyl,

R_3 denotes hydrogen, sulpho-C_1–C_2-alkyl, carboxy-C_1–C_2-alkyl or C_1–C_4-alkyl,

R_4 denotes hydrogen or C_1–C_4-alkyl,

R_5 denotes hydrogen or acyl and

R_6 denotes hydrogen, methyl, methoxy, ethoxy, chlorine, carboxyl, nitro or sulpho.

4,265,814

MATANSINOL 3-N-HEXADECANOATE

Naoto Hashimoto, Suita, and Toyokazu Kishi, Nara, both of Japan, assignors to Takeda Chemical Industries, Osaka, Japan

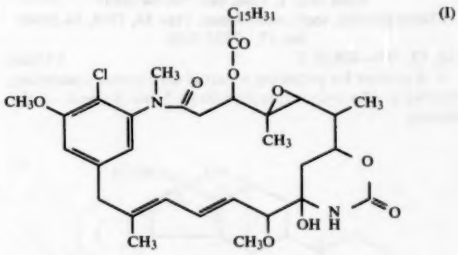
Filed Mar. 19, 1979, Ser. No. 21,702

Claims priority, application Japan, Mar. 24, 1978, 53-34644; Apr. 13, 1978, 53-43946; Oct. 12, 1978, 53-125989

Int. Cl.³ C07D *498/18*

U.S. Cl. 260—239.3 P **1 Claim**

1. A maytansinoid of the formula:



(I)

4,265,815

17-(SUBSTITUTED THIO)ANDROST-4-ENE[16,17,b]-[1,4]BENZODIOXIN-3-ONES

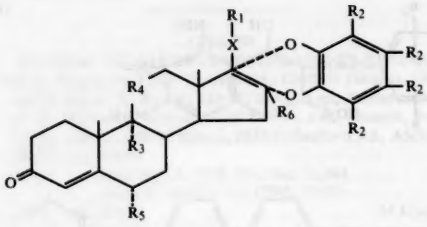
Ravi K. Varma, Belle Mead, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 31, 1980, Ser. No. 135,823

Int. Cl.³ C07J *1/00*

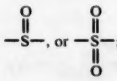
U.S. Cl. 260—239.55 R **10 Claims**

1. A steroid having the formula



or the 1,2-dehydro derivative thereof, wherein

X is S,



R_1 is alkyl, aryl, arylalkyl or acyloxyalkyl;

R_2 is fluoro, chloro, bromo or iodo (all R_2 groups are the same);

R_3 is hydrogen, fluoro, chloro, bromo or iodo;

R_4 is carbonyl, or β-hydroxymethylene;

R_5 is hydrogen, methyl or fluorine; and

R_6 is chloro, bromo, alkoxy, aryloxy, alkylthio, or arylthio.

4,265,816

PROCESS FOR PREPARING STEROID-CARBOXYLATES

Hiromi Okushima, Kawasaki; Shinichiro Fujimori, Machida; Rikizo Furuya, and Shuzo Hayakawa, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

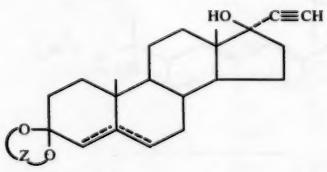
Filed May 1, 1980, Ser. No. 145,693

Claims priority, application Japan, May 14, 1979, 54-58969

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—239.55 C **1 Claim**

1. A process for preparing a steroid-carboxylate comprising reacting a 17α-hydroxypregnen-20-yn-3-one 3-acetal of the formula:

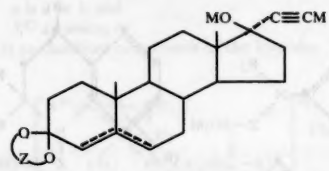


(I)

wherein Z is an alkylene group having not more than 10 carbon atoms and the dotted lines in rings A and B represent a double bond at the 4- or 5-position, with an alkali metal dimsyl of the formula:

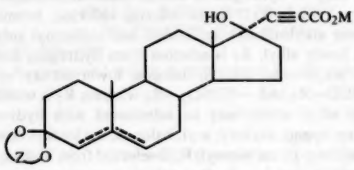
(II)

wherein M is an alkali metal atom, to give an alkali metal salt of the 17β-hydroxypregnen-20-yn-3-one 3-acetal having the formula:



(III)

wherein Z, M and the dotted lines in rings A and B are as defined in the above formulas (I) and (II), and reacting the compound of formula (III) with carbon dioxide followed by hydrolysis to give an alkali metal salt of a 3-(17β-hydroxyandrosten-3-one 3-acetal-17α-yl)propiolic acid having the formula:



(IV)

wherein Z, M and the dotted lines in rings A and B are as defined in the above formulas (I) and (II).

4,265,817

NOVEL CHIRAL ETHERS AND THEIR USE IN RESOLUTION OF ALCOHOLS AND PHENOLS

Jacques Martel, Bondy; Jean Tessier, Vincennes, and Andre Teche, Nanterre, all of France, assignors to Roussel Uclaf, Paris, France

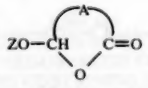
Filed Mar. 19, 1979, Ser. No. 21,833

Claims priority, application France, Mar. 17, 1978, 78 07778

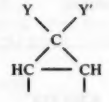
Int. Cl.³ C07D *307/77*

U.S. Cl. 260—343.3 R **4 Claims**

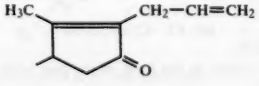
1. An ether containing chiral atoms of the formula



wherein chain A has the structure



Y and Y' are individually selected from the group consisting of hydrogen, fluorine, bromine, chlorine and alkyl of 1 to 6 carbon atoms and Z is



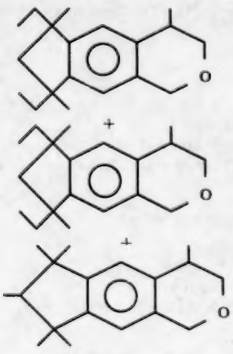
4,265,818

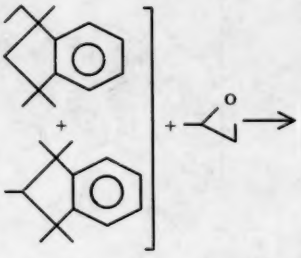
INDANE ALKANOLS AND TRICYCLIC ISOCHROMANS AND ORGANOLEPTIC USES THEREOF

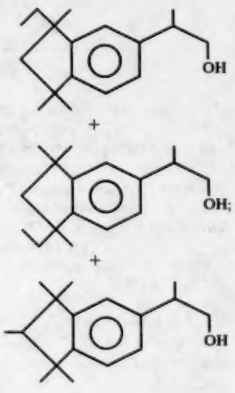
Wilhelmus J. Wiegers, Red Bank; Mark A. Sprecker, Sea Bright; Hugh Watkins, Lincroft; Manfred H. Vock, Locust, and Frederick L. Schmitt, Holmdel, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,518
Int. Cl.[3] C07D *311/78*
U.S. Cl. 260—345.2 3 Claims

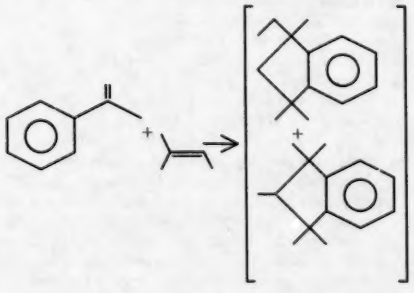
1. A product consisting essentially of compounds having the structures:



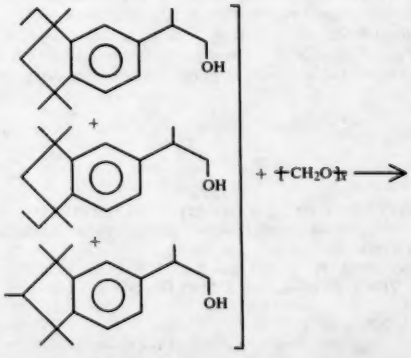




produced according to the process comprising the steps of (i) reacting isoamylene with alpha methyl styrene according to the reaction:

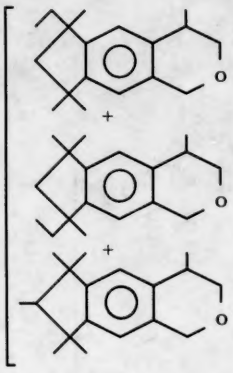


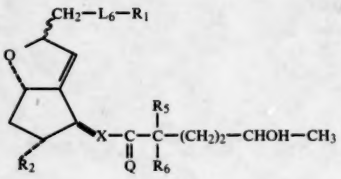
in the presence of a heterogeneous solid catalyst selected from the group consisting of acid clays and acid ion exchange resins, the mole ratio of isoamylene to alpha methyl styrene being between 1:1 and 2:1; the ratio of catalyst to reactants being from 0.1% up to 8% of the total weight of alpha methyl styrene and isoamylene; the reaction temperature being between 75° C. and 250° C.; the reaction pressure being between 50 p.s.i.g. and 300 p.s.i.g.; (ii) reacting the resulting product with propylene oxide in the presence of a catalyst to produce a mixture consisting essentially of indane alkanols according to the reaction:



and (iii) reacting the mixture consisting essentially of indane alkanols with a formaldehyde or a formaldehyde source according to the reaction:

-continued





wherein L_6 is
(1) $-(CH_2)_n-$, wherein n is one to 5, inclusive, or
(2) $-CH_2-CH=CH-$;
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or α-R_4:β-OH,
wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_1 is
(1) $-COOR_3$,
(2) $-CH_2OH$,
(3) $-CH_2N(R_7)(R_8)$,
(4) $-CO-N(R_7)(R_8)$,
(5) $-CO-NH-SO_2-R_{15}$, or
(6) tetrazolyl,
wherein R_3 is
(a) hydrogen,
(b) alkyl of one to 12 carbon atoms, inclusive,
(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,
(d) aralkyl of 7 to 12 carbon atoms, inclusive,
(e) phenyl,
(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive;
(g) —(p-Ph)—CO—CH_3,
(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,
(i) —(p-Ph)—NH—CO—(Ph),
(j) —(p-Ph)—NH—CO—CH_3,
(k) —(p-Ph)—NH—CO—NH_2,
(l) —(p-Ph)—CH=N—NH—CO—NH_2,
(m) β-naphthyl,
(n) $-CH_2-CO-R_{16}$,
wherein —(p-Ph)— is Para-phenylene and —(Ph) is phenyl;
wherein R_{16} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or
(o) a pharmacologically acceptable cation; wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different, and wherein R_{15} is hydrogen, alkyl of one to 12 carbon atoms, inclusive, phenyl, phenyl-substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive, or phenyl substituted with hydroxycarbonyl or alkoxycarbonyl of one to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl,
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro, and
wherein X is
(1) trans-CH=CH—,
(2) cis-CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CH_2-$.

4,265,819

PREPARATION OF DIHALOGENOVINYLCYCLOPROPANECARBOXYLIC ACIDS AND ESTERS

Reinhard Lantzsch, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

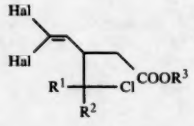
Division of Ser. No. 879,424, Feb. 21, 1978. This application Sep. 13, 1979, Ser. No. 75,363

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1977, 2710174

Int. Cl.[3] **C07D** *307/80;* **C07C** *69/65, 57/52*

U.S. Cl. 260—346.22 **2 Claims**

1. A 3-chloro-2-(2',2'-dihalovinyl)propanecarboxylic acid or ester of the formula



in which each Hal independently is fluorine, chlorine or bromine, R^1 and R^2 each independently is hydrogen or C_{1-4}-alkyl, or R^1 and R^2 together with the adjacent carbon atom form a cycloaliphatic ring with up to 7 carbon atoms, and R^3 is hydrogen or is (a) C_{1-4}-alkyl or (b) benzyl, α- or β-naphthylmethyl, furylmethyl or benzofurylmethyl, in which each is optionally substituted in the aromatic ring or at the α-carbon atom by halogen, CN, alkyl of 1–4 carbon atoms, halogenated with 1–4 carbon atoms and 1–5 halogen atoms, phenyl, or phenoxy.

4,265,820

19-HYDROXY-7,8-DIDEHYDRO-PGI$_1$ COMPOUNDS

John C. Sih, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508. This application Mar. 3, 1980, Ser. No. 126,472

Int. Cl.[3] **C07D** *307/935*

U.S. Cl. 260—346.22 **9 Claims**

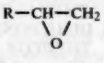
1. A prostacyclin-type compound of the formula

4,265,821
SUBSTITUTED ALKYLENE OXIDES FROM SUBSTITUTED ALKYLENE CARBONATES

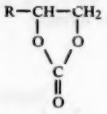
Edward E. McEntire, and Robert M. Gipson, both of Austin, Tex., assignors to Texaco Dev. Corp., White Plains, N.Y.

Division of Ser. No. 920,908, Jun. 29, 1978, abandoned. This application Nov. 7, 1979, Ser. No. 92,126
Int. Cl.[3] C07D 301/02
U.S. Cl. 260—348.16 6 Claims

1. A process for the preparation of a substituted ethylene epoxide of the formula



wherein R is alkyl, aryl, substituted alkyl, substituted aryl, alkaryl or aralkyl which comprises heating the corresponding substituted ethylene carbonate having the formula



wherein R is defined as above in the presence of a catalytic amount of lanthanum iodide.

4,265,822
PROCESS FOR PREPARING 1-HYDROXYLATED VITAMIN D COMPOUNDS FROM 5,6-TRANS-VITAMIN D COMPOUNDS

Hector F. DeLuca; Heinrich K. Schnoes; David E. Hamer, all of Madison, and Herbert E. Paaren, Verona, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Sep. 10, 1979, Ser. No. 73,840
Int. Cl.[3] C07J 9/00
U.S. Cl. 260—397.2 11 Claims

1. In a process for preparing 1α-hydroxylated vitamin D compounds comprising allylically oxidizing a vitamin D compound utilizing SeO_2 as the oxidant and exposing the oxidized product to actinic radiation, the improvement which comprises

utilizing a 5,6-trans vitamin D compound corresponding to the 1α-hydroxylated vitamin D compound which it is desired to obtain as the vitamin D compound subjected to the allylic oxidation

conducting the allylic oxidation in the presence of an organic nitrogenous base

exposing the oxidation products to actinic radiation having a wave length greater than about 310 nm in the presence of a photosensitizing agent and

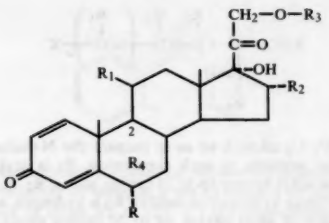
recovering the 1α-hydroxylated vitamin D compound.

4,265,823
AUROTHIOSTEROIDS

Arthur Nobile, West Caldwell, N.J., assignor to Robert E. Kosinski, Rye, N.Y., a part interest

Continuation of Ser. No. 810, Jan. 4, 1979, abandoned, which is a continuation of Ser. No. 847,011, Oct. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 663,160, Mar. 2, 1976, abandoned. This application Mar. 10, 1980, Ser. No. 129,069
Int. Cl.[3] C07J 5/00
U.S. Cl. 260—397.4 8 Claims

1. A compound selected from the group represented by the formula



wherein R represents hydrogen, alkyl or halide, R_1 represents hydroxy or oxo, R_2 represents hydrogen, hydroxy or alkyl, R_3 represents an organic aurothio moiety and R_4 represents hydrogen or halide.

2. A compound having a formula according to claim 1 in which R represents hydrogen, methyl or flourine, R_1 represents hydroxy or oxo, R_2 represents hydrogen, methyl or hydroxy, R_3 represents aurothiomalate and R_4 represents hydrogen or fluorine.

4,265,824
PROCESS FOR THE ISOLATION OF β-SITOSTEROL CONTAINING A LOW PERCENTAGE OF α-SITOSTEROL

Lasse A. Koskenniska, and Marie M. Puhakka, both of Oulu, Finland, assignors to Farmos-Yhtyma Oy, Turku, Finland

Filed Dec. 5, 1979, Ser. No. 100,502
Claims priority, application Finland, Dec. 12, 1978, 783807
Int. Cl.[3] C07J 9/00
U.S. Cl. 260—397.25 6 Claims

1. A process for the isolation of β-sitosterol which is substantially free of α-sitosterol, from a material comprising a mixture of α- and β-sitosterol, comprising:

(a) dissolving said mixture in a first organic solvent selected from the class consisting of ethanol, acetone, isopropanol, toluene, xylene, chloroform, and mixtures thereof;

(b) reacting the solution of (a) with a strong acid selected from the class consisting of hydrogen chloride, hydrogen bromide, phosphoric acid, methanesulfonic acid, and p-toluenesulfonic acid, to form a crude reaction product;

(c) recovering the reaction products from (b) from said first organic solvent;

(d) dissolving the reaction products of (c) in a second organic solvent selected from the class consisting of ethanol, isopropanol, chloroform, methylene chloride, toluene, ethylacetate, acetone, heptane, methylethylketone, and mixtures thereof; and thereafter

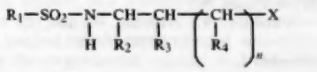
(e) selectively crystallizing β-sitosterol from said second solvent.

4,265,825
PROCESS FOR THE PREPARATION OF N-(HALOALKYL)SULFONAMIDE

Peter W. Owen; Zita K. Harmon, and Donald A. Tomalia, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

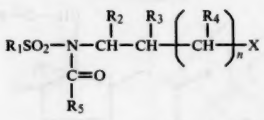
Filed Sep. 17, 1979, Ser. No. 76,111
Int. Cl.[3] C07C 143/72
U.S. Cl. 260—401 8 Claims

1. A process for preparing N-(haloalkyl)sulfonamides represented by the formula



I

which comprises reacting an N-(haloalkyl)sulfonyl imide represented by the formula



II

with a C_1–C_6 alkanol, so as to prepare the N-(haloalkyl)sulfonamide, wherein, at each occurrence, R_1 is aryl, alkaryl, aralkyl or alkyl having up to 20 carbon atoms; R_2–R_4 are each independently hydrogen or methyl; R_5 is hydrogen, aryl, alkaryl, aralkyl or alkyl having up to 20 carbon atoms; n is the integer 0 or 1 and X is chloro, bromo or iodo.

4,265,826

METHOD FOR FRACTIONATING AN OIL OR FAT TO SEPARATE THE HIGH MELTING POINT COMPONENTS THEREOF

Masaaki Iida; Chihiro Kato, both of Yokohama; Shigemitsu Ohshima, Chigasaki, and Yoshiyuki Yazawa, Kawasaki, all of Japan, assignors to Ajinomoto Company, Incorporated, Tokyo, Japan

Continuation-in-part of Ser. No. 962,974, Nov. 22, 1978, abandoned. This application Dec. 21, 1979, Ser. No. 106,011
Claims priority, application Japan, Dec. 1, 1977, 52/144294
Int. Cl.[3] C09F *5/10;* C11B *3/00*
U.S. Cl. 260—428 **9 Claims**

1. A method for fractionating an oil or fat to separate high melting point components thereof, which consists of the steps of:

(a) adjusting the temperature of an oil or fat to a temperature from the complete melting point to thirty Celsius degrees above the slip melting point of the oil or fat;

(b) seeding the temperature-adjusted oil or fat with seed crystals of the high melting point components of said oil or fat, wherein said seed crystals are in the form of raidal β, radial β' or large radial β' crystals and are produced by slowly cooling a portion of said oil or fat from a temperature above its slip melting point to a temperature at which crystals of the high melting point components of said oil or fat are formed;

(c) cooling said seeded oil or fat below said slip melting point temperature to crystallize said high melting point components; and

(d) separating the crystals of said high melting point components from the slurry obtained in step (c).

4,265,827

CATALYTIC ASYMMETRIC HYDROGENATION

William S. Knowles, Milton J. Sabacky, Ballwin, Both of Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 122,116, Mar. 8, 1971, abandoned, which is a continuation-in-part of Ser. No. 36,471, May 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 758,603, Sep. 9, 1968, abandoned. This application Sep. 5, 1978, Ser. No. 939,569
Int. Cl.[3] C07F *9/68*
U.S. Cl. 260—440 **1 Claim**

1. Methylcyclohexyl-o-anisylarsine.

4,265,828

MANUFACTURE OF ETHYLENE GLYCOL FROM SYNTHESIS GAS

John F. Knifton, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,745
Int. Cl.[3] C07C *27/06*
U.S. Cl. 260—449 L **12 Claims**

1. A process of making ethylene glycol which comprises the steps of contacting a mixture of CO and H_2 with a catalyst system comprising a ruthenium-containing compound dispersed in a low melting quaternary phosphonium or ammonium base or salt and heating said resultant reaction mixture under a pressure of 500 psi or greater at a temperature of at least 180° C. for a sufficient time to provide said ethylene glycol.

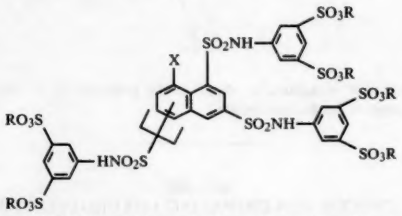
4,265,829

HALOGENATED-NAPHTHALENETRIYLTRIS(SULFONYLIMINO)-ARYL DISULFONIC ACIDS AND SALTS THEREOF

Seymour Bernstein, New City, and John F. Poletto, Nanuet, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1979, Ser. No. 106,609
Int. Cl.[3] C07C *143/60*
U.S. Cl. 260—510 **3 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; and X is halogen.

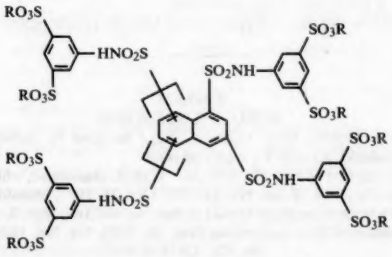
4,265,830

NAPHTHALENETETRAYLETRAKIS(SULFONYLIMINO)-ARYL DISULFONIC ACIDS AND SALTS THEREOF

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1979, Ser. No. 106,615
Int. Cl.[3] C07C *143/60*
U.S. Cl. 260—510 **4 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation.

4,265,831

PROCESS FOR THE PREPARATION OF HYDROXYALKYLPERFLUOROALKANE SULPHONAMIDES

Karl-Heinz Mitschke, Odenthal; Klaus Geisler, Bonn-Beuel, and Hans Niederprüm, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

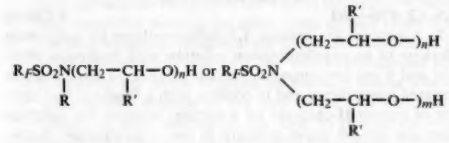
Filed Jul. 2, 1979, Ser. No. 54,338

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1978, 2832346

Int. Cl.[3] C07C *143/74*

U.S. Cl. 564—96 4 Claims

1. A process for the preparation of a hydroxy-alkylperfluoroalkane sulphonamide of the formula



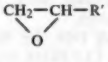
wherein

R_F is a perfluoroalkyl group having from 1 to 20 carbon atoms;

R and R′ each independently is hydrogen or an alkyl, hydroxyalkyl, haloalkyl, cycloalkyl, aralkyl, alkenyl or aryl radical; and

m and n each independently is an integer from 1 to about 30, comprising reacting a perfluoroalkylsulphonamide of the formula

with an epoxide of the formula



in the presence of a basic catalyst and in the absence of a solvent.

4,265,832

PREPARATION OF ANTHRANILAMIDES

Klaus-Werner Krebs, and Carl Metzger, both of Dormagen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

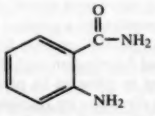
Continuation of Ser. No. 895,316, Apr. 11, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 83,882

Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2719020

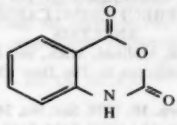
Int. Cl.[3] C07C *102/00*

U.S. Cl. 564—163 3 Claims

1. A process for the preparation of anthranilamide of the formula



comprising reacting isatoic anhydride of the formula



with an approximately equimolar amount of ammonia in a solvent consisting of water at a pH of about 7 to 10.5 and a temperature of about 20° to 100° C., and maintaining the pH with the aid of a buffer system comprising ammonia, an ammonium halide and carbonate, about 0.9 to 1.4 mols of ammonia, about 0.05 to 0.5 mol of the ammonium carbonate and about 0.05 to 0.5 mol of the ammonium halide being used per mol of isatoic anhydride.

4,265,833

PROCESS FOR THE PREPARATION OF HYDROXY-DIPHENYLAMINES

Friedrich Werner, Cologne, and Heinz U. Blank, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,625

Claims priority, application Fed. Rep. of Germany, Nov. 21, 1978, 2850391

Int. Cl.[3] C07C *85/06, 121/64, 137/00, 101/04*

U.S. Cl. 564—435 4 Claims

1. A process for the preparation of a hydroxy-diphenylamine which comprises condensing a dihydroxybenzene with an excess amount of a primary aromatic amine in the presence of a catalytic amount of an acid at an elevated temperature and, without isolating said acid, thereafter distilling off excess primary aromatic amine from the reaction mixture in the presence of a base.

4,265,834

PROCESS FOR THE CATALYTIC HYDROGENATION OF NITROBENZENE

Udo Birkenstock, Ratingen; Burkhard Lachmann, Meerbusch; Josef Metten, Krefeld, and Herbert Schmidt, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 66,977

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1978, 2849002

Int. Cl.[3] C07C *85/11*

U.S. Cl. 564—421 17 Claims

1. In a gas phase process for the catalytic hydrogenation of nitrobenzene to aniline wherein nitrobenzene is contacted with hydrogen in the presence of a catalyst, the improvement wherein said catalyst is a multi-component supported catalyst having a BET surface area of less than 20 square meters per gram and comprises 1 to 20 grams of a noble metal per liter of support and 1 to 20 grams of one or more transition metals of Groups IVa, Va, or VIa of the Periodic Table of the Elements per liter of support, said catalyst having been prepared by pretreating the support, prior to impregnation thereof with said noble method or said transition metal, with a base, thereafter drying the so-pretreated material to a residual moisture content of less than 10 percent of the maximum absorbency of the support and thereafter impregnating the support with 1 to 20 grams of said noble metal per liter of support and 1 to 20 grams of said transition metal per liter of support.

4,265,835

CONVERSION OF CARBOXAMIDE TO N-SUBSTITUTED DERIVATIVE THEREOF USING CARBON MAGNETIC ANALYSIS

Charles J. McDonald, Midland, Mich., and Robert H. Beaver, Antioch, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 10, 1979, Ser. No. 74,021
Int. Cl.[3] C08F 8/30, 8/32
U.S. Cl. 564—204 11 Claims

1. In a process for converting an organic carboxamide containing one or more carboxamide moieties corresponding to the formula:

to an N-substituted carboxamide wherein one hydrogen of the carboxamide moieties is substituted with alkyl or substituted alkyl wherein the substituent is —OH, —SO_3M wherein M is H or metal cation or —$N(R')_2$ wherein each R′ is individually hydrogen, alkyl or hydroxyalkyl in which process a carboxamide is reacted by contacting it with N-substituting reagent(s), the improvement in which the reaction mixture comprising the carboxamide, N-substituting reagent and N-substituted carboxamide is, periodically during the process, analyzed for the presence of carbon-13 nuclei by:

(a) subjecting a reaction mixture which contains the carboxamide, N-substituting reagent(s) and N-substituted derivative in a nuclear magnetic spectrometer to a magnetic field and an electromagnetic field such that conditions of magnetic resonance are achieved for carbonyl carbon-13 nuclei in the reaction mixture;

(b) detecting an output which is an indication of the disturbance of said fields by the reaction mixture; and

(c) quantitatively determining the mole ratio of the carboxamide to the N-substituted carboxamide by comparing the relative outputs attributable to the carbonyl carbons of the carboxamide and the N-substituted carboxamide.

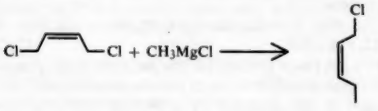
4,265,836

PROCESS FOR PRODUCING CIS-PENT-2-ENYL-1-CHLORIDE

Wilhelmus J. Wiegers, Red Bank, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 32,746, Apr. 24, 1979, abandoned. This application Jul. 31, 1980, Ser. No. 174,187
Int. Cl.[3] C07C 21/04
U.S. Cl. 570—230 4 Claims

1. A process for producing cis-pent-2-enyl-1-chloride according to the reaction scheme:



comprising the steps of reacting methyl magnesium chloride with cis-1,4-dichloro-butene-2 thereby forming a Grignard complex and hydrolyzing said Grignard complex, the reaction between the methyl magnesium chloride and the cis-1,4-dichloro-butene-2 being carried out in the absence of a catalyst and in the presence of a solvent selected from the group consisting of tetrahydrofuran, mixtures of tetrahydrofuran and benzene, mixtures of tetrahydrofuran and toluene, and diethyl ether; the mole ratio of methyl magnesium chloride:cis-1,4-dichloro-butene-2 being about 3:1; the temperature of reaction between the methyl magnesium chloride and the cis-1,4-dichloro-butene-2 being from about 0° C. up to reflux temperature; the methyl magnesium chloride being added to the cis-1,4-dichloro-butene-2 over a period of from about 2 up to about 3 hours; and carrying out the hydrolysis with a hydrolysis agent which is selected from the group consisting of aqueous ammonium chloride and dilute acetic acid; and then separating the reaction product, substantially pure cis-pent-2-enyl-1-chloride from the solvent by means of fractional distillation.

4,265,837

PRODUCTION OF 1,2-DICHLOROETHANE

Günter Legutke, Brühl; Harald Scholz, Erftstadt, and Kurt Schuchardt, Brühl, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 27, 1979, Ser. No. 33,817
Claims priority, application Fed. Rep. of Germany, May 2, 1978, 2819308
Int. Cl.[3] C07C 17/02
U.S. Cl. 570—243 4 Claims

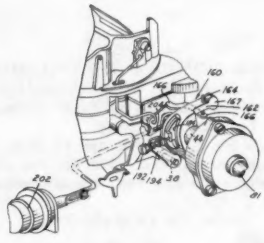
1. A process for making 1,2-dichloroethane by subjecting ethylene to an oxychlorination reaction with hydrogen chloride and a gas containing molecular oxygen, in gas phase, at elevated temperature and in contact with a fluidized bed catalyst of copper-II-chloride on a carrier, wherein the reaction gases are cooled under pressure in two condensation stages, condensed 1,2-dichloroethane and water are removed, the bulk of unreacted starting gas and inert gas are recycled, the reaction gases coming from the second condensation stage are delivered to a third condensation stage, cooled therein under pressure down to a temperature within the range 5° to 18° C. and to the extent necessary to retain in the recycle gas 0.5 to 3 volume % of 1,2-dichloroethane, and the recycle gas is admixed, directly upstream of the reactor, with a quantity of pure oxygen necessary to replace consumed oxygen, the improvement which comprises: introducing preheated hydrogen chloride wholly or partially into the recycle gas heated to 150° to 200° C. and then admixing the recycle gas with pure oxygen the oxygen being admitted at a point lying between the hydrogen chloride feed point into the recycle gas and the feed point of the recycle gas into the reactor.

4,265,838

CARBURETOR FAST IDLE CAM MECHANISM

Donald H. Wilson, Auburndale, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Apr. 10, 1980, Ser. No. 138,966
Int. Cl.[3] F02M 3/06
U.S. Cl. 261—52 12 Claims



1. A fast idle cam mechanism for a carburetor having an air/fuel induction passage and a throttle valve rotatably mounted for a pivotal movement across the passage between an essentially closed position to a number of open positions to control the quantity of air/fuel mixture flow through the passage, a stop means fixed for rotation with the throttle valve and adapted to be stopped at times in its pivotal movement in a throttle valve closing direction by frictional abutment against the face edge of a fast idle cam, an axially movable fast idle cam rotatably mounted on a shaft and including a recess in the face

edge defining a cam follower slot, the slot having a closed circular track-like shape defined by a pair of side walls and arcuate turn around type end portions, the slot receiving the stop means therein,

the slot having a pair of ramps each varying in radial projection along its length and together being in a side-by-side relationship and blending together at their ends at the turn around end portions of the slot forcing relative movement between the slot and stop means upon rotation of the cam, rotation of the cam in one direction moving the one ramp surface relative to the stop means engaged therewith to progressively pivot the stop means to close the throttle valve until the turn around end portion of the slot is engaged by the stop means whereupon continued rotation of the cam in the one direction moves the cam axially for engagement of the stop means with the other ramp surface, subsequent rotation of the cam in the opposite direction thereafter moving the other ramp surface relative to the stop means to progressively pivot the stop means to open the throttle valve until the other turn around end portion of the slot is engaged by the stop means whereupon further rotation of the cam in the other direction effects an axial shifting of the cam to realign the stop means with the one ramp surface for subsequent restarting closing movement of the throttle valve upon subsequent rotation of the cam in the one direction.

4,265,839

EVAPORATION AIR HUMIDIFIER

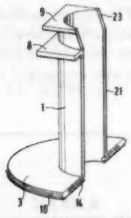
Heinz G. Baus, Ulmenweg 46, CH-3601 Thun, Switzerland

Filed Aug. 24, 1979, Ser. No. 69,375

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837132

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—91 **16 Claims**



1. Evaporation air humidifier having a pump, a motor for driving the pump having a shaft extending through a support plate into a water supply container, the shaft carrying a pump wheel or vanes disposed in a lower pot-shaped pump housing formed with a suction opening and a connecting piece for connecting a pressure line thereto, comprising a longitudinally divided support pipe surrounding the motor shaft and connecting the pump housing to the support plate, said support pipe being formed of two longitudinal shells having jointing surfaces formed with a wedge-shaped bevel at respective ends thereof extending into an opening formed in the support plate, at least one of said shells being suspended under clamping action from the support plate in vicinity of said opening formed therein, and connecting means for mechanically holding said shells and said pot-shaped pump housing together.

4,265,840

VAPOR DISTRIBUTOR PIPE FOR AIR HUMIDIFIER

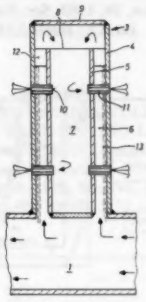
Paul Bähler, Wangenstrasse 8, Dübendorf, Switzerland

Filed Sep. 18, 1979, Ser. No. 76,538

Claims priority, application Switzerland, Sep. 25, 1978, 9958/78

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—115 **8 Claims**



1. A vapour distributor pipe arrangement for an air humidifier, comprising vapour exhaust pipe means formed by an inner wall, which bounds an inner chamber of the vapour exhaust pipe means, and an outer wall, which surrounds said inner wall and defines therewith an outer chamber of the vapour exhaust pipe means, said outer chamber being in communication with said inner chamber, and said arrangement further comprising a plurality of vapour exhaust elements, each of which is mounted in the inner and outer walls of the vapour exhaust pipe means so that it extends from the inner chamber to the exterior of the vapour exhaust pipe means through the outer chamber, whereby vapour which enters the inner chamber can pass to the exterior of the vapour exhaust pipe means through said vapour exhaust elements.

4,265,841

METHOD FOR PRODUCTION OF COMPOSITE PIEZOELECTRIC MATERIAL

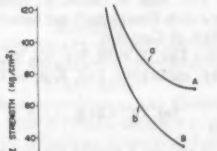
Yoshinori Fujimori, Kawasaki; Akio Ishizawa, Tokyo, and Minoru Hashimoto, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 20, 1979, Ser. No. 77,264

Claims priority, application Japan, Sep. 21, 1978, 53-115087; Sep. 27, 1978, 53-118044; Jun. 28, 1979, 54-80696

Int. Cl.³ B29C *25/00;* B29B *1/04;* B29G *7/00*

U.S. Cl. 264—22 **10 Claims**



1. A method of producing a composite piezoelectric material, comprising the steps of treating an inorganic dielectric material powder with a latex-containing dispersion so as to coat the surfaces of the powder particles with the rubber particles contained in the latex in a manner to provide encapsulated

powder particles, kneading the encapsulated powder particles, shaping the kneaded mass, and polarizing the shaped mass.

4,265,842

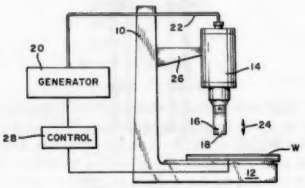
METHOD OF FORMING A CORNER IN A THERMOPLASTIC MATERIAL USING ULTRASONIC VIBRATIONS

Arthur M. Summo, Londonderry, N.H., assignor to Branson Ultrasonics Corporation, New Canaan, Conn.

Filed Jan. 28, 1980, Ser. No. 115,908

Int. Cl.³ B06B *3/00*

U.S. Cl. 264—23 **2 Claims**



1. The method of forming a corner in a substantially rigid flat packaging material such as a corrugated thermoplastic board comprising a pair of flat plastic covers having corrugated plastic liner material disposed between and bonded to said respective covers, the steps including:

providing a resonator adapted to the resonant and vibrate at an ultrasonic frequency and having a frontal surface shaped for producing a crease in said board;

providing contact between said frontal surface and one of said covers and urging said frontal surface toward the opposite cover against the rigidity exhibited by the corrugations of said liner material to crush said corrugations;

rendering said resonator resonant whereby under the influence of said ultrasonic vibrations and the force between said frontal surface and said board the thermoplastic material contacted by said frontal surface softens and flows;

withdrawing said frontal surface from contact with said board before it has penetrated through said opposite cover whereby to cause responsive to the solidification of the softened thermoplastic material a weld between said covers in the form of a crease, and

folding the board in the crease to thereby form a corner.

4,265,843

METHOD OF PRODUCING SHAPED SILICON-CARBIDE BODIES

Francisco J. Dias; Ashok K. Gupta; Erno Gyarmati, all of Jülich; Marian Kampel, Heinsberg; Hartmut Luhleich, Düren; Rudolf Munzer, Alsdorf, and Aristidis Naoumidis, Jülich-Koslar, all of Fed. Rep. of Germany, assignors to Kernforschungsanlage Julich Gesellschaft mit berschrankter Haftung, Julich, Fed. Rep. of Germany

Filed Dec. 3, 1979, Ser. No. 99,893

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852410

Int. Cl.³ C01B *31/36*

U.S. Cl. 264—57 **9 Claims**

1. A method of making a shaped silicon-carbide body comprising the steps of:

(a) forming a porous body consisting at least in part of carbon and of a predetermined shape;

(b) heating the body formed in step (a) to a temperature of substantially 1400° C. to substantially 1500° C.;

(c) adding silicon powder to the body at said temperature to cause said powder to adhere at least to a surface of said body the so adhered silicon powder impregnating the pores of said body; and

(d) thereafter heating the silicon-powder-impregnated body of step (c) to a temperature of substantially 1800° C. to substantially 2000° C. for a period sufficient to effect reaction between the silicon powder and the carbon of the body to transform at least a major part of the carbon of said body to silicon carbide.

4,265,844

METHOD OF MANUFACTURING A VOLTAGE-NONLINEAR RESISTOR

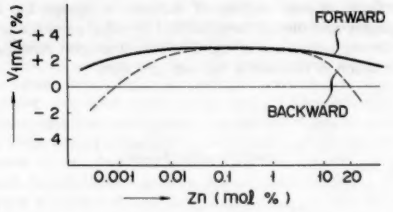
Yuji Yokomizo, and Kiyoshi Minami, both of Nagai, Japan, assignors to Marcon Electronics Co. Ltd., Nagai, Japan

Filed May 7, 1980, Ser. No. 147,525

Claims priority, application Japan, May 16, 1979, 54-60682; May 17, 1979, 54-61300; Sep. 3, 1979, 54-113378; Sep. 3, 1979, 54-113379; Sep. 5, 1979, 54-114560

Int. Cl.³ B28B *1/00;* **B29C** *25/00*

U.S. Cl. 264—61 **8 Claims**



1. A method of manufacturing a voltage-nonlinear resistor made of a sintered composition body which exhibits a voltage-nonlinearity, comprising:

preparing a ZnO-based composition containing zinc-oxide and at least 0.001 to 20 mol% of metal zinc and at least one metal oxide selected from the group consisting of 1 mol% or less of bismuth oxide, 1 mol% or less of cobalt oxide and 1 mol% or less of manganese oxide;

shaping the ZnO-based composition in the form of a plate or a rod;

sintering the body of composition thus shaped at 1,000° C. or more in an oxidizing atmosphere; and

forming electrodes on the body of composition thus sintered so as to be electrically connected to the sintered body.

4,265,845

PROCESS FOR THE PRODUCTION OF A CERAMIC HEAT-RETAINING BRICK

Axel Eschner, Wiesbaden, Fed. Rep. of Germany, assignor to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Nov. 26, 1979, Ser. No. 97,545

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851083

Int. Cl.³ C04B *35/20*

U.S. Cl. 264—63 **6 Claims**

1. In a process for the production of a ceramic heat-retaining brick made up of a mixture of a granular material and a binding agent which comprises shaping and drying a mixture of the granular material and a binding agent, the improvement in which the granular material comprises olivine as the principal constituent and contains powdered iron having a particle size of less than 0.1 mm present in an amount between about 5 and 20% by weight of the brick.

4,265,846

METHOD OF BINDING LIGNOCELLULOSIC MATERIALS

Kuo-Cheng Shen; David P. C. Fung, both of Ottawa, and Louis Calve, Aylmer, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Canada

Filed Oct. 5, 1979, Ser. No. 82,287
Int. Cl.[3] B29J 5/00
U.S. Cl. 264—109 7 Claims

1. A method for binding lignocellulosic materials which comprises; forming a mixture of the lignocellulosic materials and at least 2%, by weight, ammonium based spend sulfite liquor solids, forming a mat with the mixture and hot pressing the mat at a temperature of 170° C., or higher, for a time sufficient for thermosetting and consolidation of the mat to provide a composite product.

4,265,847

TABLETTING PROCESS

Peter Hunt, and Aston M. Trelford, both of Bury-St-Edmunds, England, assignors to Kirby Pharmaceuticals Ltd, Bury-St-Edmunds, England

Continuation of Ser. No. 891,813, Mar. 30, 1978, abandoned.
This application Feb. 20, 1980, Ser. No. 122,833
Int. Cl.[3] B29B 1/02
U.S. Cl. 264—122 1 Claim

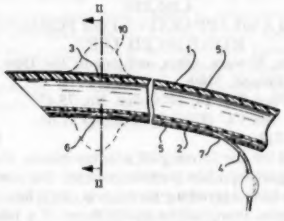
1. A process for the tabletting direct from powder form without intervening granulation of a composition containing an active compound having sterilizing, bactericidal or pharmaceutical properties, said tablet producing an effervescent action when contacted with water, the process consisting of direct compression in the absence of substantial wetting of a homogenous powdered admixture consisting essentially of said active compound, an alkali metal bicarbonate for carbon dioxide liberation to generate effervescent action, and a solid, water soluble, aliphatic carboxylic acid or acid salt thereof in the presence of an alkali metal carbonate also in powder form, but not primarily for effervescent action to form a stable, soluble and hard tablet composition.

4,265,848

METHOD FOR THE PRODUCTION OF A MEDICAL INSTRUMENT

Heinz Rüsch, Waiblingen, Fed. Rep. of Germany, assignor to Willy Rusch GmbH & Co. KG, Fed. Rep. of Germany

Filed Aug. 16, 1979, Ser. No. 67,173
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837813
Int. Cl.[3] B29H 21/04
U.S. Cl. 264—130 11 Claims



1. A method for forming a tubular medical instrument, such as a catheter having a balloon cuff of elastic material comprising the steps of

forming an elongated hollow hose having an inflation lumen extending along its length and an inflation opening at a selected point on the outer surface, along the length of the hose,

applying an annular band of a parting compound to the surface of said hose adjacent said inflation opening and thereafter

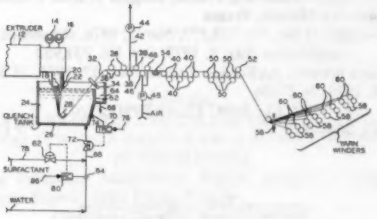
extruding a continuous cylindrical sheath of elastic material directly about the outer surface of said hose along the length thereof, said sheath simultaneously bonding to the surface of said hose, which is free of said parting compound, and forming an inflatable cuff about said inflation opening.

4,265,849

METHOD FOR PRODUCING MULTIFILAMENT THERMOPLASTIC YARN HAVING LATENT CRIMP

David E. Borenstein, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 29, 1979, Ser. No. 43,072
Int. Cl.[3] D01D 5/22
U.S. Cl. 264—168 27 Claims



1. A method of forming yarn comprising the steps of:

(a) extruding a melt-spinnable plastic material in molten form through spinning orifices of at least one spinneret die to form a yarn end comprising a plurality of filaments;

(b) quenching and cooling said thus formed filaments of said yarn end in a quenching liquid;

(c) drawing the thus quenched and cooled filaments of said yarn end so as to form a drawn yarn end;

(d) passing the thus drawn yarn end over a heated surface so as to heat at least a portion of said filaments;

(e) cooling the yarn end thus passed over said heated surface; and

(f) thereafter heating the thus cooled yarn end so as to thereby develop latent crimp in at least a portion of the filaments thereof.

4,265,850

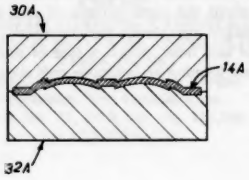
PROCESS AND APPARATUS FOR THE PRODUCTION OF SPECTACLE FRAME PARTS OF SYNTHETIC MATERIAL

Michel Coulon, Champs-sur-Marne, and Gerard Laprade, St Maur des Fosses, both of France, assignors to Essilor International Cie Generale d'Optique, Joinville-le-Pont, France

Filed Jul. 10, 1978, Ser. No. 923,320
Claims priority, application France, Jul. 13, 1977, 77 21604
Int. Cl.[3] B29C 1/02; B29F 1/00
U.S. Cl. 264—225 15 Claims

1. A process for producing casting half-moulds for fabricating spectacle frame parts of synthetic material having complex, curved three-dimensional configuration with undercut portions, said process comprising the steps of providing injection half-moulds having impressions which are respectively negative and positive replicas of the shape of the ultimate spectacle frame part of curved complex three-dimensional configuration,

and injecting homopolymers and copolymers of polyolefins into the cavity defined by the injection half-moulds, and removing the resulting injection moulded casting half-mould of substantially uniform thickness throughout from the cavity.



4,265,851

PROCESS FOR MOULDING CELLULAR POLYCARBODIIMIDE

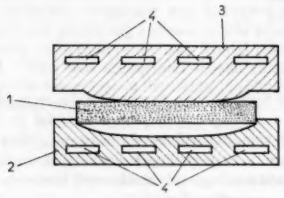
Jacques Roth, Strasbourg, France, assignor to Roth Freres S.A., Strasbourg-Meinau, France

Continuation of Ser. No. 738,177, Nov. 2, 1976, abandoned. This application Aug. 8, 1978, Ser. No. 931,952

Claims priority, application France, Nov. 17, 1975, 75 35563; Sep. 2, 1976, 76 27056

Int. Cl.[3] **B29C** *17/00;* **B29D** *27/00*

U.S. Cl. 264—321 **7 Claims**



1. A process for moulding cellular polycarbodiimide, comprising producing a discrete friable panel of cured thermoplastic cellular polycarbodiimide containing a small but effective amount of silicone oil, compressing said cured panel for a period of time less than five seconds in a mould heated to a temperature above the softening temperature of the panel so as to increase its density and to deform it to a desired shape, said amount being effective to produce a smooth, elastic surface on said shape upon simultaneous heating and compression thereof, slightly cooling the mould after moulding, and removing said shape from the mould, said polycarbodiimide being heated only in said mold for said period.

4,265,852

PROCESS FOR FORMING A PLASTIC ARTICLE

Donald G. Sauer, Harwinton, Conn., assignor to National Can Coporation, Chicago, Ill.

Continuation-in-part of Ser. No. 820,444, Aug. 1, 1977, abandoned, which is a continuation of Ser. No. 615,813, Sep. 22, 1975, abandoned. This application Feb. 1, 1979, Ser. No. 8,605

The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.

Int. Cl.[3] **B29C** *17/04;* **B29D** *9/04*

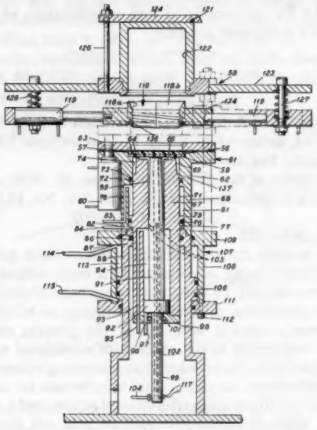
U.S. Cl. 264—512 **5 Claims**

1. A process for plastic container manufacture comprising the steps of:

(A) supporting a preformed thermoplastic member in a forming position adjacent the mouth of a female container neck forming member which in turn is adjacent the mouth of a blow mold member having a cavity therein and clamping peripheral portions of said thermoplastic member,

(B) relatively movably projecting a first male forming body into a face of said thermoplastic member to stretch and form the inward portions of said thermoplastic member into a hollow article having an aperture within said peripheral portions and also having integral side and end wall regions, which wall regions extend through said female container member and into said blow mold cavity,

(C) movably projecting a second male forming body, which surrounds said first male forming body, into the inside of said article through said aperture to cooperate with said female container neck forming member and compression



mold a neck region in said hollow article adjacent to said aperture, and sealingly close said aperture,

(D) said female container neck forming member further including trimming surfaces associated with said mouth thereof, and said second male forming body, at the termination of said projecting, being brought into a cooperating trimming engagement with said trimming surfaces, thereby severing said peripheral portions from said article, and then

(E) pressurizing the interior of said sealed hollow article by injecting a fluid thereinto to enlarge the volume of said hollow article to an extent sufficient to generally conform said wall regions against said cavity, thereby forming said article into a container.

4,265,853

METHOD AND APPARATUS FOR FORMING OF REINFORCED TUBE

Carl B. Havens, Newark, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

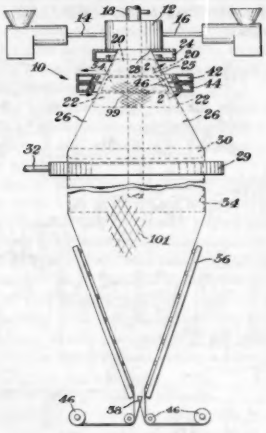
Filed Sep. 14, 1979, Ser. No. 75,477

Int. Cl.[3] **B29F** *3/08;* **B29D** *7/20*

U.S. Cl. 264—519 **10 Claims**

1. A method for the forming of a thermoplastic film having a strength imparting ribbed mesh pattern, the steps of the method comprising extruding through a die a heat-plastified synthetic resinous composition in the form of a tube having generally radial symmetry about the axis of extrusion, passing the tube while still in a heat-plastified condition past a cooling mechanism having a defined periphery, said mechanism having a plurality of counter-rotating elements for impinging cooling means on the tube, fixedly spacing said film with respect to said cooling means, impinging said cooling means on said film, said cooling means imparting sharp ribs on the film body, said tube being formable into a tough film having a ribbed mesh pattern formed thereon.

8. An apparatus for the forming of a thermoplastic film having a strength imparting ribbed mesh pattern thereon, said apparatus comprising a die for extruding a tubular thermoplastic extrudate, a cooling mechanism located adjacent said die and defining a generally circular periphery with respect to the tubular extrudate, elements located about said mechanism



including means for impinging a cooling means upon the surface of said tubular extrudate, means for counter-rotating said elements, and means for fixedly spacing the film with respect to said cooling means, whereby a cross-ribbed mesh pattern is produced on said film when said cooling means is impinged on said film with said apparatus.

4,265,854

PROCESS INHIBITING THE COALESCENCE OF FLOWABLE PHOSPHORUS PENTACHLORIDE IN CLOSED CONTAINERS

Joachim Wortmann, Flörsheim-Wicker; Gerhard Rieb, Frankfurt am Main; Franz-Josef Dany, and Joachim Kandler, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 86,815

Claims priority, application Fed. Rep. of Germany, Oct. 25, 1978, 2846364

Int. Cl.³ B01J *19/00*; C01B *25/10*

U.S. Cl. 422—40 **6 Claims**

1. A process of inhibiting the coalescence of flowable phosphorus pentachloride during extended storage in a closed container, which comprises: admitting a readily volatizable organic liquid boiling within the range of from about 20° to 200° C. and being inert with respect to phosphorus pentachloride to the container prior to, during or after the introduction of phosphorus pentachloride thereinto, and hermetically sealing the container, the liquid being used in a proportion of about 1 to 15 weight %, based on the quantity of phosphorus pentachloride.

4,265,855

SYSTEM FOR PERFORMING IMMUNOCHEMICAL AND OTHER ANALYSES INVOLVING PHASE SEPARATION

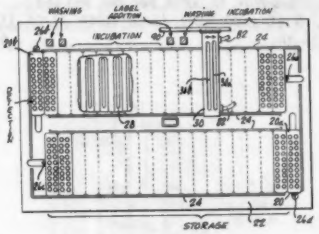
Richard M. Mandle, Pompton Lakes; Frank Karsai, Dover, and Raymond S. Krautheim, Nutley, all of N.J., assignors to Electro-Nucleonics, Inc., Essex, N.J.

Filed Nov. 3, 1978, Ser. No. 957,091

Int. Cl.³ G01N *1/14*

U.S. Cl. 422—65 **16 Claims**

1. A system for automatically processing liquids in open-ended containers comprising conveyor means for conveying said containers past a plurality of operating stations, one of said operating stations comprising a station for adding and removing a liquid respectively to and from said containers, said station comprising a head assembly engageable with at least



one of said containers and including at least one liquid supply tube and at least one aspirating tube, said head assembly including means for positioning only one of said tubes within the open end of one of said containers at any time.

4,265,856

ANALYSIS REACTOR AND ITS USE FOR VOLUMETRIC ANALYSIS OF A SAMPLE OF A SUBSTANCE IN POWDER FORM

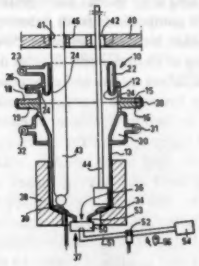
Charles Falinower, Montelimar, France, assignor to Ciments Lafarge France, Saint Cloud, France

Filed Jun. 20, 1979, Ser. No. 50,489

Claims priority, application France, Jun. 27, 1978, 78 19090

Int. Cl.³ G01N *27/28*

U.S. Cl. 422—68 **10 Claims**



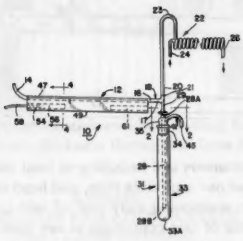
1. A reactor for analyzing a powder substance mixed with a liquid, comprising a substantially cylindrical upright body having an open upper end adapted for introducing the powder sample into said body, a sealable bottom end opening, means for heating a lower portion of said cylindrical body adjacent the bottom end thereof, sealing means for sealing and opening said bottom end opening, liquid inlet means for introducing a liquid into said cylindrical body in a circumferential inlet area adjacent to said top end of said body, said liquid inlet means adapted to direct at least a portion of said liquid toward the inner wall surface of said cylindrical body in an annular zone adjacent to said circumferential liquid inlet area, means for cooling the inner wall of said body in a circumferential zone located beneath, and comparatively close to, said circumferential inlet area, stirring means arranged within said cylindrical body near the bottom thereof and analyzing electrode means adapted to be immersed in the mixture of said sample and said liquid within said body.

4,265,857

IN-LINE DISTILLATION SYSTEM

Nabih P. Kelada, Glen Ellyn; Cecil Lue-Hing, Chicago, and David T. Lordi, LaGrange, all of Ill., assignors to The Metropolitan Sanitary District of Greater Chicago, Chicago, Ill.

Filed Nov. 16, 1978, Ser. No. 961,162
Int. Cl.[3] B01D *3/00*; B01L *11/00*; G01N *31/06, 35/08*
U.S. Cl. 422—101 9 Claims



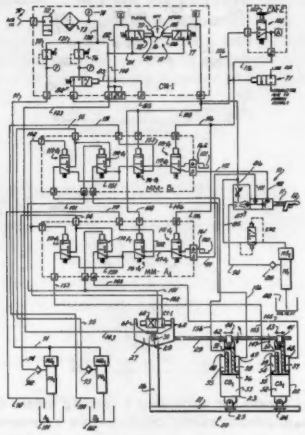
1. In an in-line distillation system for separating volatile components entrained in a given quantity of a series of samples of liquid to be tested, distillation means having a thin film distillation tube, said tube having an inlet and an outlet for separating the volatile components from the liquid in each sample, said tube engaging and being heated by metal heating bar means, said inlet receiving said samples of liquid; distribution means connected in fluid communication with said outlet of said distillation means and having an upwardly extending first conduit and a downwardly extending second conduit for flowing the separated volatile components from said outlet of said distillation means through said first conduit and for flowing liquid from the outlet of said distillation means through said second conduit; and trap means for resisting the flow of the separated volatile components from entering said second conduit, said trap means including an inner downwardly depending conduit having at its upper end an inlet disposed below said outlet of said distillation means and connected in fluid communication with the lower end portion of said second conduit, said trap means including container means at least partially surrounding said inner conduit for receiving liquid from said second conduit via said inner conduit, said container means having a bottom wall and having means defining an outlet means open to the atmosphere at the upper portion thereof spaced by a substantial distance above the exit end of said inner conduit so that liquid from said distillation means fills said inner conduit and said container means to impede the flow of the separated volatile components into said second conduit and flows from the container outlet, said container means being substantially larger in cross section than the cross section of said inner conduit to permit liquid and any spurious volatile components flowing from said distillation means through said second conduit into said inner conduit to flow freely from the exit end of said inner conduit to the outlet of said container means, said trap means having a member for connecting said inner conduit sealingly and removably to said container means for facilitating disassembly of said trap means for cleaning purposes, said exit end of said inner conduit being unobstructed and spaced by a substantial distance above the bottom wall of said container means to provide a space therebetween to permit the collection of sediment material and thus to inhibit accumulations thereof from blocking the flow of liquid through said trap means, and condensing means for retrieving for testing purposes substantially the entire amount of said volatile component and liquid vapor received from said distillation means via said first conduit.

4,265,858

METERING AND MIXING APPARATUS FOR MULTIPLE COMPONENT

Gerald W. Crum, Elyria, and Lawrence J. Macartney, Lorain, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Mar. 31, 1976, Ser. No. 672,239
Int. Cl.[3] B01J *14/00*; G05D *11/02*
U.S. Cl. 422—129 8 Claims



1. Apparatus for selectively proportionally metering and mixing one of a plurality of base flowable component materials with a common coreactant flowable component material, which apparatus comprises,

a pressurized source for each of a plurality of base component materials,

a pressurized source of a coreactant component material,

a metering cylinder for each base and coreactant component material, a metering piston reciprocable within each cylinder, a piston rod attached to said piston and extending outwardly from a cylinder end wall, said metering piston being operative to divide said metering cylinder into opposed end chambers,

mixing means for mixing at least one of said base component materials with said coreactant component material, said mixing means including a chamber having inlet ports for the component materials and an outlet for the mixture of component materials,

a plurality of manifold modules, each of said manifold modules having inlet means operatively connected to one of said pressurized sources, each of said manifold modules also being operatively connected to opposite end chambers of one of said metering cylinders, each of said manifold modules further having outlet means operatively connected to said mixing means, each of said manifold modules having direction control valve means therein operative to alternately connect opposite end chambers of one of said metering cylinders to said inlet means and to said outlet means;

control valve means in flow controlling communication with said direction control valve means of said manifold modules,

a pivotally mounted beam connected to the piston rod of each of said metering pistons, said beam being operatively connected to said control valve means so as to effect reversal of said control valve means in response to movement of said metering pistons,

pneumatic logic control means for simultaneously connecting one of said plurality of sources of base component material and said source of coreactant component material with said mixing means,

said pneumatic logic control means comprising a base component selector module and a plurality of base component selector valve modules, said base component selector valve modules being connected via a pneumatic control circuit to said base component selector module, said base component selector valve modules being equal in number to the number of said plurality of base components,

a plurality of pneumatic motor driven transfer pumps, each of said transfer pumps being operative to pump one of said component materials to said inlet means of one of said manifold modules,

each of said base component selector valve modules being operable to route either high pressure air or low pressure air to one of said plurality of pneumatic motor driven transfer pumps, and

said pneumatic logic control means operable to simultaneously route high pressure air to one of the plurality of pneumatic motor driven transfer pumps and to route low pressure air to a plurality of other pneumatic motor driven transfer pumps so as to cause said one of the base component materials to be pumped at high pressure to said inlet means of one of said manifold modules while simultaneously other base component materials are pumped at low pressure to said inlet means of the manifold modules.

4. Apparatus for metering and mixing a plurality of flowable materials,

a pressurized source for each material,

an independent metering means for each material coupled with a pressurized source of said material through a passageway means,

mixing means including a mixing chamber operatively connected to each of said metering means through said passageway means,

each of said metering means including a metering cylinder having a double acting piston movable therein, a piston rod connected to said piston and projecting beyond an end wall of said metering cylinder,

pivotally mounted beam means connected to the piston rod of each of said metering means, said beam means being movable as a result of motive force imparted from said metering means,

isolating means for isolating one of said metering means for motive force contributions of the other metering means imparted through said beam means,

said isolating means comprising mechanical means for decoupling the motive force of one of said metering means from the motive force contribution of said other metering means, and

said mechanical means including at least one clutch.

4,265,859

APPARATUS FOR PRODUCING SEMICONDUCTOR GRADE SILICON AND REPLENISHING THE MELT OF A CRYSTAL GROWTH SYSTEM

David N. Jewett, Harvard, Mass., assignor to Energy Materials Corporation, Harvard, Mass.

Division of Ser. No. 911,089, Jun. 2, 1978, abandoned. This application Oct. 26, 1979, Ser. No. 88,366

Int. Cl.[3] **B01J** *12/02, 19/02;* **C01B** *33/02*

U.S. Cl. 422—199 **8 Claims**

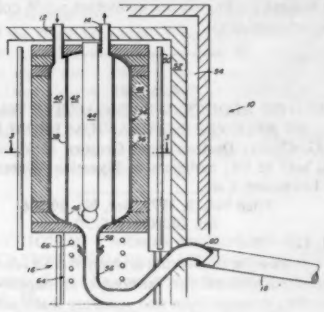
1. Apparatus for producing high purity silicon and melt replenishment for a crystal growth zone on a semicontinuous basis, comprising

(a) a vessel defining a reaction chamber,

(b) conduit means including inlet and outlet tubes connected to said chamber for delivering and exhausting a flow of heat-reactive, silicon-bearing feed gas through said chamber,

(c) first heating means operatively associated with said chamber for selectively and cyclically heating said chamber to the reaction temperature of said gas whereby silicon from said feed gas will deposit on walls of said chamber and to the melting point of silicon deposited in said chamber whereby the deposited will melt and flow to the lower portion said chamber,

(d) a U-shaped drain trap connected to the lower portion of said vessel for draining molten silicon from said chamber for delivery to said zone during a melting phase of the chamber operation and when containing a sufficient quantity of silicon to block at least one part of said trap forming



a seal between said zone and said chamber during a reaction phase of the chamber operation, and,

(e) second heating means operatively associated with said drain trap for separately controlling the temperature thereof whereby silicon collected in said trap can be cyclically melted and solidified to control the flow of silicon from said chamber.

4,265,860

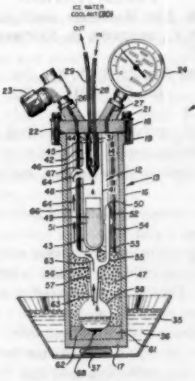
HIGH PRESSURE SOXHLET EXTRACTOR

Walter G. Jennings, Davis; Robert H. Wohleb, Orangevale, and Norman W. Wohlers, Davis, all of Calif., assignors to J & W Scientific, Incorporated, Rancho Cordova, Calif.

Filed Mar. 27, 1980, Ser. No. 134,625

Int. Cl.[3] **B01D** *11/02*

U.S. Cl. 422—280 **6 Claims**



1. A high pressure Soxhlet extractor comprising:

a. a Soxhlet apparatus including an extractor body, a flask and a condenser;

b. a pressure vessel encompassing said Soxhlet apparatus, said vessel comprising a vertically elongated hollow cylinder having a bottom cover and a removable top cover;

c. means for heating said pressure vessel to distil an extractant in said flask;

d. means for chilling said condenser to liquefy the distilled extractant;

e. a thimble containing a sample having soluble constituents disposed in said extractor body below said condenser to receive the extractant in liquid phase descending by gravity from said condenser; and,

f. siphon means for periodically carrying the extractant and sample constituents from said extractor body to said flask to resume cycling of the extractant while collecting the extracted material.

4,265,861

METHOD OF REDUCING RADIOACTIVE WASTE AND OF RECOVERING URANIUM FROM IT

James G. Cleary, Dormont, and Gregory E. Zymboly, Penn Hills, both of Pa., assignors to Wyoming Mineral Corporation, Lakewood, Colo.

Filed Feb. 9, 1979, Ser. No. 10,566
Int. Cl.[3] G21F *9/30*
U.S. Cl. 423—10 12 Claims

1. In a process for recovering uranium from a recovery leach supersaturated with calcium carbonate, an improved method of recovering uranium from said recovery leach and of reducing radioactive waste containing radium, comprising

(1) precipitating calcium carbonate from said recovery leach;

(2) separating said precipitated calcium carbonate from said recovery leach;

(3) dissolving said precipitated calcium carbonate with acid to form a solution of radium, uranium, and calcium carbonate;

(4) removing said uranium from said solution;

(5) precipitating MSO_4. $RaSO_4$ from said solution by adding $SO_4^=$ and M^{++} ions, where M is Ba or Sr; and

(6) separating said precipitated MSO_4. $RaSO_4$ from said solution.

4,265,862

PROCESS FOR PURIFYING RARE-EARTH COMPOSITIONS USING FRACTIONAL SULFATE PRECIPITATION

Weimar W. White, East Rochester, and Laurie A. Kimble, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 25, 1979, Ser. No. 6,691
Int. Cl.[3] C01F *17/00*
U.S. Cl. 423—21.1 7 Claims

1. A process for purifying a composition comprising at least one rare-earth element and at least one acid-soluble radioactive impurity of the actinium decay chain, said process comprising the steps of:

(1) forming an aqueous solution of said composition having a pH between 4 and 6.5;

(2) precipitating a portion of said rare earth and said radioactive impurity by adding to said solution in an amount sufficient to effect such precipitation and while maintaining the pH between 4.0 and 6.5;

(i) a soluble barium or strontium salt;

(ii) a soluble aluminum, magnesium or zirconium salt;

(iii) a sulfate ion-providing salt; and

(iv) a selective precipitating agent consisting of a compound or salt selected from the group consisting of:

(a) nitrogen-containing heterocyclic ring compounds having an hydroxyl group located in a β or γ position with respect to a nitrogen atom in the heterocyclic ring and

(b) ammonium salts of N-nitrophenylhydroxylamines;

(3) separating the solution from the precipitate; and

(4) recovering purified rare earth from the solution.

4,265,863

INTEGRATED PROCESS FOR TREATMENT OF RESIDUAL SOLUTIONS FROM ANODIZATION PLANTS

Samuël J. Wajc, Braine L'Alleud, Belgium, assignor to Exergie Société de Personnes a Responsabilitié Limitée, Brussels, Belgium

Filed Apr. 3, 1979, Ser. No. 26,642
Claims priority, application France, May 4, 1978, 78 10047
Int. Cl.[3] C01F *7/02, 7/74;* C01D *5/00*
U.S. Cl. 423—119 15 Claims

1. An integrated process for the treatment of residual solutions resulting from an anodization treatment of aluminum or aluminum alloy objects, using an aqueous solution of caustic soda in a pickling treatment and an aqueous solution of sulphuric acid in an anodization treatment wherein treatment of the residual solutions comprises the operational stages:

(a) producing aluminum sulphate by the evaporation of a portion of the residual anodization solution to produce aluminum sulphate in the form of a concentrated solution or crystals;

(b) producing precipitated aluminum hydroxide and a solution of sodium sulphate by treatment of the portion of residual anodization solution not used in operational stage (a) with a portion of the residual pickling solution;

(c) producing sodium aluminate by treatment of the portion of the residual pickling solution not used in operational stage (b) with a portion of the aluminum hydroxide produced in operational stage (b) and concurrent or subsequent evaporation of the resulting solution of sodium aluminate to produce sodium aluminate in the form of a concentrated solution, a powder or granules.

3. An integrated process for the treatment of residual solutions resulting from an anodization treatment of aluminum or aluminum alloy objects, using an aqueous solution of caustic soda in a pickling treatment and an aqueous solution of sulphuric acid in an anodization treatment wherein treatment of the residual solutions comprises the operational stages:

(a) producing aluminum sulphate in the form of a concentrated solution or crystals by treatment of a portion of the residual anodization solution with a portion of the aluminum hydroxide formed in operational stage (b);

(b) producing precipitated aluminum hydroxide and a solution of sodium sulphate by treatment of the portion of residual anodization solution not used in operational stage (a) with a portion of the residual pickling solution;

(c) producing sodium aluminate by treatment of the portion of the residual pickling solution not used in operational stage (b), with a portion of the aluminum hydroxide produced in operational stage (b) and concurrent or subsequent evaporation of the resulting solution of sodium aluminate to form sodium aluminate in the form of a concentrated solution, a powder or granules.

9. An integrated process for the treatment of residual solutions resulting from an anodization treatment of aluminum or aluminum alloy objects, using an aqueous solution of caustic soda in a pickling treatment and an aqueous solution of sulphuric acid in an anodization treatment wherein treatment of residual solutions comprises the operational stages:

(a) producing precipitated aluminum hydroxide and a solution of sodium sulphate by treatment of the residual anodization solution with a portion of the residual pickling solution and sulfuric acid, and

(b) producing sodium aluminate by treatment of the portion of the residual pickling solution not used in operational stage (a) with a portion of the aluminum hydroxide produced in operational stage (a) and concurrent or subsequent evaporation of the resulting solution of sodium aluminate to produce sodium aluminate in the form of a concentrated solution, a powder or granules.

4,265,864

PROCESS FOR TREATING BAUXITE OR SIMILAR RAW MATERIAL

Yujiro Sugahara, Tokyo; Hiroyuki Naito; Kiyoshi Takai, both of Tsuruoka, and Shigehisa Imafuku, Nakajo, all of Japan, assignors to Mizusawa Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 12, 1979, Ser. No. 11,544
Claims priority, application Japan, Feb. 13, 1978, 53/14043
Int. Cl.[3] C01F 7/08
U.S. Cl. 423—121 12 Claims

1. A process for treating an alumina material containing 50 to 88% by weight alumina based on total weight of said material and 2 to 95% by weight of Fe_2O_3 based on the weight of alumina, which comprises intimately mixing said alumina material with an alkali metal carbonate or alkali metal bicarbonate at a mixing ratio of Al_2O_3:Na_2O of from 1:1 to 1:3, molding the mixture into granules in the presence of 1 to 100% by weight of water, based on the alumina material as a granulation medium, heat-treating the granules at a temperature of to 750° to 950° C. for 5 to 30 minutes, leaching the heat-treated granules with an aqueous medium, and thereby substantially recovering the alumina from the alumina material in the form of an aqueous solution of alkali metal aluminate.

4,265,865

PROCESS FOR THE MANUFACTURE OF PHOSPHORUS PENTACHLORIDE

Gerhard Münster, Soden am Taunus; Gerhard Riess, and Jürgen Russow, both of Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 11, 1980, Ser. No. 167,660
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928599
Int. Cl.[3] C01B 25/10
U.S. Cl. 423—300 3 Claims

1. Process for the manufacture of phosphorus pentachloride from phosphorus trichloride and chlorine, which comprises reacting the phosphorus trichloride and chlorine in the presence of a melt of phosphorus pentachloride and at a pressure of from 1.05 to 30 bars and a temperature of from 160° C. to 250° C., and removing the reaction product as a melt from the reactor.

4,265,866

PROCESS FOR PRODUCING HYPOPHOSPHOROUS ACID (H_3PO_2) AND NON-TRANSITION METAL HYPOPHOSPHITES

Gregory G. Arzoumanidis, Stamford, Conn., and Kirk V. Darragh, Yorktown, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed May 3, 1979, Ser. No. 35,576
Int. Cl.[3] C01B 25/12, 25/165
U.S. Cl. 423—304 45 Claims

1. A process comprising reacting, in the absence of a catalyst and under an acidic condition, phosphine with an aqueous solution of hydrogen peroxide, wherein the reacting step is initially accomplished in the presence of a quantity of hypophosphorous acid to initially produce the acidic condition, to produce an acid solution containing hypophosphorous acid (H_3PO_2) as the predominant phosphorus containing acid.

4,265,867

PREPARATION OF DICALCIUM PHOSPHATE

Bruce F. Caswell, Whitmore Lake, Mich., assignor to Arcanum Corporation, Ann Arbor, Mich.

Filed Jun. 20, 1980, Ser. No. 161,718
Int. Cl.[3] C01B 15/16, 25/26
U.S. Cl. 423—309 7 Claims

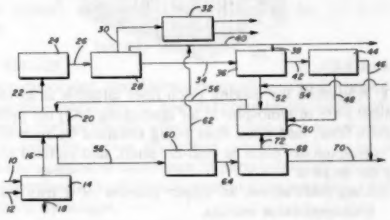
1. A process for preparing granular dicalcium phosphate suitable for use as an animal feed supplement, which comprises the steps of: agitating a slurry of finely divided calcium oxide-supplying reactant particles suspended in a water-soluble, inert, organic liquid; introducing into said slurry while it is being agitated and thoroughly mixing therein water and defluorinated wet-process phosphoric acid in the stoichiometric amount necessary for the formation of dicalcium phosphate, the thus-formed reaction mixture being agitated until the reaction between said calcium oxide-supplying reactant and said phosphoric acid is substantially complete whereby to form dicalcium phosphate which is substantially free of unreacted phosphoric acid and unreacted calcium oxide reactant, the agitation of the reaction mixture effecting repeated collisions of solid particles whereby to form agglomerates suspended in said organic liquid and wherein after completion of the reaction the agglomerates consist essentially of the dicalcium phosphate particles bound together by said water; then discontinuing said agitating; separating said agglomerates from said inert organic liquid; and recovering said agglomerates substantially free of said inert organic liquid.

4,265,868

PRODUCTION OF CARBON MONOXIDE BY THE GASIFICATION OF CARBONACEOUS MATERIALS

John F. Kamody, Irwin, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Feb. 8, 1978, Ser. No. 876,009
Int. Cl.[3] C01B 31/00
U.S. Cl. 423—415 A 29 Claims



1. A process for producing increased amounts of a carbon monoxide-rich gas in the gasification of carbonaceous materials, comprising:

(a) reacting the carbonaceous materials with a gasifying entraining medium selected from the group comprising oxygen; oxygen and steam; oxygen and carbon dioxide; oxygen, carbon dioxide, and steam; oxygen and water; oxygen, water and carbon dioxide at temperatures in the range of about 1300° F. to about 3500° F. at a pressure in the range of about 1 to about 175 atmospheres absolutes to produce raw gases containing predominantly carbon monoxide and hydrogen, along with carbon dioxide, water, hydrogen sulfide, and methane;

(b) contacting indirectly the hot raw gas in a heat exchanger with a gas containing predominantly carbon dioxide and hydrogen that is in contact with a water gas shift reaction catalyst, thereby cooling said raw gas while simultaneously supplying heat to the carbon dioxide and hydrogen containing gas;

(c) treating the cooled raw gas to remove hydrogen sulfide, carbon dioxide, and water from the raw gas;

(d) separating and collecting carbon monoxide, as a first portion of the carbon monoxide-rich gas product, and hydrogen from the treated, cooled raw gas in different zones;

(e) combining the separated and collected hydrogen with carbon dioxide to form a gas containing predominantly carbon dioxide and hydrogen;

(f) conveying the gas containing predominantly carbon dioxide and hydrogen to the heat exchanger of step (b) to indirectly contat the raw gas while the gas containing

predominantly carbon dioxide and hydrogen is in contact with a water gas shift reaction catalyst wherein the hot raw gas provides the heat necessary to perform the endothermic reaction between carbon dioxide and hydrogen to produce the carbon monoxide-containing gas;

(g) separating and collecting the carbon monoxide from the carbon monoxide-containing gas; and

(h) combining said carbon monoxide with the first portion of carbon monoxide previously collected to produce a carbon monoxide-rich gas.

4,265,869

METHOD OF AND APPARATUS FOR MAKING PITCH FIBER INFUSIBLE

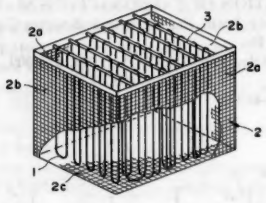
Hisatsugu Kaji; Iwawo Kameyama; Takashi Hamaguti, and Tamotsu Miyamori, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 51,191

Claims priority, application Japan, Jun. 30, 1978, 53-78555

Int. Cl.³ D01F *9/14*

U.S. Cl. 423—447.4 **2 Claims**



1. A method for making pitch fiber infusible at an elevated temperature in atmospheric air containing NO_2 for producing carbon fiber, said pitch fiber being obtained by melt-spinning of petroleum-tar pitch or coal-tar pitch, said method comprising the steps of

placing bars across an upper portion of a tray having a U-shaped cross section,

suspending said pitch fiber to be infusibilized from said bars,

introducing said tray loaded with said pitch fiber to be infusibilized into a furnace where the infusibilization is to be carried out and which is provided with gas-exchanging chambers respectively in its inlet portion and its outlet portion as well as at least two gas circulating means each of which comprises a combination of a blower or a fan and a heat exchanger, and

maintaining said tray loaded with said pitch fiber in atmospheric air containing 0.1 to 10% by volume of NO_2 at a temperature of 100° to 400° C. within said furnace,

the packing density of said pitch fiber suspended in said tray and the superficial velocity of the circulation gas caused by said circulating means in said furnace being regulated so that they satisfy the formula:

$$50 > \frac{\text{Packing density of said pitch fiber (kg/m}^3\text{)}}{\text{Superficial velocity of circulation gas in said furnace (Nm/sec)}} > 10$$

4,265,870

METHOD FOR PRODUCING CARBON BLACK

King L. Mills, and Paul H. Johnson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 2, 1976, Ser. No. 746,963

Int. Cl.³ C01B *31/02*; C09C *1/48*

U.S. Cl. 423—450 **6 Claims**

1. A method of producing carbon black comprising the steps of:

(a) pyrolyzing a make hydrocarbon by heating said make hydrocarbon in a reaction zone with hot combustion gases and thereby producing smoke, containing gases and particulate carbon black;

(b) flowing the smoke into a quench zone;

(c) contacting the smoke in the quench zone first with water to thereby cool the smoke to a temperature sufficiently low to substantially stop the pyrolysis, thereby forming an admixture of smoke and water vapor;

(d) contacting said admixture in the quench zone secondly with a cooling gas to thereby further cool the smoke to form a gaseous mixture containing particulate carbon black; and

(e) separating particulate carbon black from at least a portion of said gaseous mixture.

4,265,871

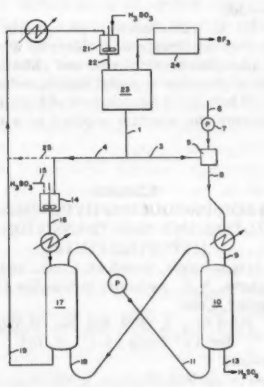
PURIFICATION OF BORON-CONTAINING SULFURIC ACID

Charles J. Felice, Jr., Randolph Township, Morris County, N.J.; Francis E. Evans, Hamburg, N.Y.; Martin A. Robinson, East Amherst, N.Y., and Richard E. Eibeck, Orchard Park, N.Y., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 7, 1979, Ser. No. 36,464

Int. Cl.³ C01B *17/90, 35/06, 9/08, 7/00*

U.S. Cl. 423—531 **12 Claims**



1. A process comprising:

(a) adding fluosulfonic acid to contaminated sulfuric acid which is a first portion of the waste acid of a boron trifluoride synthesis process containing dissolved boron trifluoride and boric acid at a molar ratio of fluosulfonic acid to boric acid of at least about 3,

(b) contacting the contaminated sulfuric acid with an inert gas to withdraw boron trifluoride into the inert gas,

(c) contacting the inert gas with an absorbing liquid which is a second portion of the waste acid of a boron trifluoride synthesis process to which boric acid or boric oxide has been added to remove the boron trifluoride from the inert gas, and

(d) feeding the absorbing liquid containing boron trifluoride removed from the inert gas into the boron trifluoride synthesis process.

4,265,872

PROCESS FOR PRODUCING CRYSTALLINE FIBROUS POTASSIUM TITANATE

Yoshinori Fujiki, No. 624 Takezono 3-chome, Sakura-mura, Niihari-gun, Ibaraki-ken, Japan

Filed Jul. 25, 1979, Ser. No. 60,735
Int. Cl.[3] C01G 23/00
U.S. Cl. 423—598 2 Claims

1. In a process for producing a crystalline fibrous potassium titanate which comprises:
(a) melting a mixture of a titanium component and a potassium component in a ratio such that the product has the formula $K_2O.nTiO_2$ wherein n is an integer of 1 to 5;
(b) quenching the molten product;
(c) washing the quenched product with water; and
(d) re-heating the product at a temperature lower than its melting point thereby forming fibers therein, the improvements comprising quenching the molten product in a vessel which is cooled from one side to give a temperature gradient from said side to the opposite side to transfer heat in one direction, applying compress stress to the product perpendicular to the fibrous axis during the washing step and treating the washed product with an acid thereby forming potassium titanate having the formula $K_2O.6TiO_2$.

4,265,873

METHOD FOR TYPING HUMAN LEUKOCYTE ANTIGENS

Michael J. Sheehy, Madison, Wis.; Paul M. Sondel, Boston, Mass.; Fritz H. Bach; Marilyn L. Bach, both of Madison, Wis., and Rudolf Wank, New York, N.Y., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 697,545, Jun. 18, 1976, abandoned.
This application Jul. 3, 1978, Ser. No. 921,487
Int. Cl.[3] G01N 33/16; A61K 43/00
U.S. Cl. 424—1 8 Claims

1. A method for typing human leukocyte antigens of HLA-D which comprises:
incubating, in vitro, purified human blood leukocytes obtained from two individuals, where the leukocytes from one of the individuals have been treated to prevent their proliferation during incubation;
carrying out the incubation for a period of from about 9 to about 14 days to essential completion of the proliferative response;
recovering the leukocytes from the incubation medium;
incubating, in vitro, the thus recovered leukocytes, with purified human blood leukocytes obtained from a third individual;
measuring the response of the recovered leukocytes through the uptake by the responding leukocytes of tritiated thymidine or tritiated uridine added to the incubating mixture; and
utilizing said measurement as a definition of the antigens present in the third individual.

4,265,874

METHOD OF DELIVERING DRUG WITH AID OF EFFERVESCENT ACTIVITY GENERATED IN ENVIRONMENT OF USE

Pieter Bonsen, Los Altos, Calif.; Patrick S. Wong, Kowloon, Hong Kong, and Felix Theeuwes, Los Altos, Calif., assignors to Alza Corporation, Palo Alto, Calif.

Filed Apr. 25, 1980, Ser. No. 143,644
Int. Cl.[3] A61K 9/46; A61J 1/00
U.S. Cl. 424—15 29 Claims

1. An osmotic device for delivering a drug to an environment of use, said device comprising:
(a) a shaped laminated wall comprising a lamina formed of a semi-permeable material and a lamina formed of a microporous material, said wall permeable to the passage of an external fluid present in the environment of use and substantially impermeable to the passage of drug, the wall surrounding and forming;
(b) a compartment containing the drug indomethacin which exhibits a limited solubility in the fluid, and a pharmaceutically acceptable compound selected from the group consisting of carbonates, bicarbonates and mixtures thereof, which compounds are capable of reactively effervescing with fluid present in the environment of use; and,
(c) a passageway in the wall connecting the compartment and the exterior of the device for delivering (1) the drug in a therapeutically effective amount to the envirionment, and (2) the compound which reacts with fluid in the environment and effervesces, and thereby aids in delivering the drug to the environment over a prolonged period of time.

4,265,875

CONTROLLED RELEASE SUPPOSITORIES

Geoffry A. Byrne, East Lothian, and Ross I. Aylott, Edinburgh, both of Scotland, assignors to Inveresk Research International, Musselburgh, Great Britain

Division of Ser. No. 817,412, Jul. 20, 1977. This application Oct. 19, 1979, Ser. No. 86,471
Claims priority, application United Kingdom, Jul. 23, 1976, 30793/76
Int. Cl.[3] A61K 9/02
U.S. Cl. 424—19 5 Claims

1. A non-dissolving, non-disintegrating slow-release suppository consisting essentially of hydroxypropylmethyl-cellulose, water, and a therapeutically effective amount of a water-soluble therapeutically active ingredient wherein the water is present in an amount of more than 35 parts by weight and the hydroxypropylmethyl-cellulose is present in an amount of less than 65 parts by weight.

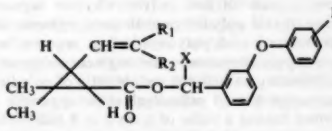
4,265,876

ANIMAL EAR-TAGS, THEIR MANUFACTURE AND THEIR USE

Patrick G. Feakins, Ashford, England, assignor to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Feb. 22, 1979, Ser. No. 14,047
Claims priority, application United Kingdom, Mar. 7, 1978, 9001/78
Int. Cl.[3] A61F 13/00; A01N 37/34, 37/00; G09F 3/00
U.S. Cl. 424—28 9 Claims

1. An animal ear tag for attachment to an ear of an animal, characterized in that at least part of the tag is made from a material comprising a solid organic polymeric macromolecular substance having a molecular weight above 1000 and a pesticidally-active compound having the general formula:



(I)

wherein R_1 and R_2 are independently selected from fluorine, chlorine and bromine; X is hydrogen, cyano or ethynyl; and Z is hydrogen, chlorine, fluorine or bromine.

4,265,877

COMPOSITION CONTAINING SODIUM FLUORIDE IN A CHEWING GUM BASE

Louis T. Tenta, 6007 N. Sheridan Rd., Apt. 24A, Chicago, Ill. 60660

Filed Feb. 22, 1980, Ser. No. 123,682
Int. Cl.[3] A61K 9/68, 7/18, 33/16
U.S. Cl. 424—48 5 Claims

1. A composition for enhanced oral absorption of fluoride ions comprising a chewing gum base, and a mixture of sodium fluoride and calcium carbonate in the form of oyster shell distributed within said base, said oyster shell being present in an amount sufficient to enhance the absorption of fluoride ions from the gastrointestinal tract including the oral and buccal mucosa.

4,265,878

ANTIPERSPIRANT STICK COMPOSITIONS

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 7, 1979, Ser. No. 46,591
Int. Cl.[3] A61K 7/38, 31/695
U.S. Cl. 424—68 5 Claims

1. An antiperspirant stick composition consisting essentially of

(a) 30 to 60 parts by weight of an aqueous solution of an astringent agent as a discontinuous phase, dispersed in a solid matrix consisting essentially of

(b) 18 to 30 parts by weight of a volatile liquid having a normal boiling point of less than 250° C. selected from the group consisting of methylsiloxane fluids having the average unit formula

$$(CH_3)_aSiO_{\frac{4-a}{2}}$$

wherein a has an average value of from 2 to 3, inclusive, and paraffinic hydrocarbon fluids,

(c) 1 to 5 parts by weight of a component selected from the group consisting of solid alkanoic acids having at least 12 carbon atoms per molecule,

(d) 1 to 5 parts by weight of a polydiorganosiloxanepolyoxyalkylene copolymer containing at least one polydiorganosiloxane segment and at least one polyoxyalkylene segment, said polydiorganosiloxane segment consisting essentially of

$$R_bSiO_{\frac{4-b}{2}}$$

siloxane units wherein b has a value of from 0 to 3, inclusive, there being an average value of approximately 2 R radicals per silicon for all siloxane units in the copolymer, and R denotes a radical selected from the group consisting of methyl, ethyl vinyl, phenyl and a divalent radical bonding said polyoxyalkylene segment to the polydiorganosiloxane segment, at least 95 percent of all R radicals being methyl; and said polyoxyalkylene segment having an average molecular weight of at least 1000 and consisting of from 0 to 50 mol percent polyoxypropylene units and from 50 to 100 mol percent polyoxyethylene units, at least one terminal portion of said polyoxyalkylene segment being bonded to said polydiorganosiloxane segment, any terminal portion of said polyoxyalkylene segment not bonded to said polydiorganosiloxane segment being satisfied by a terminating radical; the weight ratio of polydiorganosiloxane segments to polyoxyalkylene segments in said copolymer having a value of from 2 to 8 and

(e) 20 to 30 parts by weight of a component selected from the group consisting of waxy esters and a mixture of one part by weight of a waxy ester with up to 3 parts by weight of a solid alkanol having at least 12 carbon atoms per molecule, the total of (a) plus (b) plus (c) plus (d) plus (e) being 100 parts by weight.

4,265,879

METHOD FOR CONTROLLING BLOOD TRIGLYCERIDES

Joseph E. Fields, Ballwin, and John H. Johnson, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 832,865, Sep. 13, 1977, abandoned, and a continuation-in-part of Ser. No. 572,799, Apr. 29, 1975, Pat. No. 4,117,111, which is a continuation-in-part of Ser. No. 353,832, Apr. 23, 1973, Pat. No. 3,923,972, which is a continuation-in-part of Ser. No. 188,577, Oct. 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 789,081, Jan. 2, 1969, abandoned, said Ser. No. 832,865, is a continuation of Ser. No. 634,723, Nov. 24, 1975, abandoned, which is a continuation-in-part of said Ser. No. 353,832. This application Mar. 29, 1979, Ser. No. 25,166
Int. Cl.[3] A61K 31/74, 31/78
U.S. Cl. 424—78 16 Claims

1. A method for controlling the blood triglyceride level in a living animal body in need thereof comprising orally administering to said animal body a pharmaceutically effective amount for such purpose of a non-systemic copolymer of (1) an alpha alkene of about 10 to about 22 carbon atoms and (2) maleic acid or anhydride, or a pharmaceutically acceptable amide, ester, imide, salt thereof or mixtures thereof, said copolymer having a molecular weight in the range of from about 1,000 to 1,000,000.

4,265,880

MICROBIAL INSECTICIDE

Kemet D. Spence, Potlatch, Id., and Robert E. Andrews, Pullman, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Division of Ser. No. 33,895, Apr. 27, 1979, Pat. No. 4,223,007, and a continuation-in-part of Ser. No. 835,817, Sep. 22, 1977, abandoned. This application Mar. 26, 1980, Ser. No. 134,325
Int. Cl.[3] A01N 15/00; C09D 5/32; C12K 1/08
U.S. Cl. 424—93 15 Claims

1. A method of making a microbial insecticide composition, comprising

(a) preparing a mixture comprising (i) nucleic acid particles, (ii) proteinaceous material particles, (iii) microbial insect pathogens of viral, bacterial, or fungal origin, and (iv) an amount of water sufficient to wet substantially the entire mixture and give it a paste-like consistency; and

(b) agitating the paste-like mixture in a manner adapted to break up the mixture into discrete microbeads, whereby the microbial insect pathogens are embedded in the microbeads.

4,265,881

PLASMINOGEN-ACTIVATING SUBSTANCE AND THE PREPARATION AND USE OF SUCH SUBSTANCE

Ikuo Yamashina, Kyoto; Toshisuke Kawasaki, Hirakata, and Michiko Tsukuda, Takamatsu, all of Japan, assignors to Tobishi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Mar. 17, 1980, Ser. No. 130,798
Claims priority, application Japan, Mar. 30, 1979, 54-36980
Int. Cl.[3] A61K 35/40
U.S. Cl. 424—106 19 Claims

1. A plasminogen-activating substance which is an extract of the bile of hogs and which is characterized by:

(A) a molecular weight of 80,000±10,000;

(B) an isoelectric point of 7.1;

(C) an ultraviolet absorption spectrum showing a peak (λ max) at a wave length of about 278 nm:

(D) a fibrin-lysis activity such that a Ca-added standard fibrin plate is lysed but a heated fibrin plate is not lysed;

(E) a thermal stability such that heating at a temperature of 80° C. for 10 minutes causes the plasminogen-activating

activity to be decreased to an extent corresponding to 50% of the original activity and heating at a temperature of 60° C. for 30 minutes causes the plasminogen-activating activity to be decreased to an extent corresponding to from 30 to 40% of the original activity;

(F) a solubility in a salin solution and an insolubility in water-soluble organic solvents, and;

(G) a synthetic substrate-lysis activity such that Glutaryl-Gly-Arg-MCA and Pro-Phe-Arg-MCA are only marginally hydrolysed.

2. A process for preparing a plasminogen-activating substance from the bile of hogs, comprising the steps of:

first fractionating the bile of hogs with a water-soluble organic solvent to prepare a first precipitate;

subjecting said first precipitate to a first extraction with a buffer solution having a pH of from 7.0 to 8.0, to prepare a first extract solution;

second fractionating said first extract solution with acetone to prepare a second precipitate;

subjecting said second precipitate to a second extraction with a buffer solution having a pH of from 7.0 to 8.0 to prepare a second extract solution, and;

third fractionating said second extract solution by a method selected from the group consisting of absorption chromatography with hydroxylapatite, ion-exchange chromatography with an anion exchanger, and hydrophobic adsorption chromatography with a hydrophobic adsorping agent, to provide a fraction comprising the plasminogen-activating substance which is characterized by:

(A) a molecular weight of 80,000±10,000;

(B) an isoelectric point of 7.1;

(C) an ultraviolet absorption spectrum showing a peak (λ max) at a wave length of about 278 nm;

(D) a fibrin-lysis activity such that a Ca-added standard fibrin plate is lysed but a heated fibrin plate is not lysed;

(E) a thermal stability such that heating at a temperature of 80° C. for 10 minutes causes the plasminogen-activating activity to be decreased to an extent corresponding to 50% of the original activity and heating at a temperature of 60° C. for 30 minutes causes the plasminogen-activating activity to be decreased to an extent corresponding to from 30 to 40% of the original activity;

(F) a solubility in a salin solution and an insolubility in water-soluble organic solvents, and;

(G) a synthetic substrate-lysis activity such that Glutaryl-Gly-Arg-MCA and Pro-Phe-Arg-MCA are only marginally hydrolysed.

4,265,882

SULPHUR ANALOGS OF PENICILLINS HAVING A NUCLEOPHILE SUBSTITUTED IN THE 6 AND 7 POSITION, RESPECTIVELY

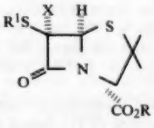
John C. Sheehan, Lexington, and Thomas J. Commons, Boston, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 3, 1977, Ser. No. 838,874

Int. Cl.³ C07D *499/00*

U.S. Cl. 424—114 **28 Claims**

1. A compound having the formula:



where R is a protective group for acids or a pharmaceutically acceptable group, R^1 is hydrogen or an organic electrophilic moiety, and X is a halogen or an organic nucleophile.

4,265,883

COMPOSITION AND PROCESS FOR TREATING UTERINE PROLAPSE

Mable R. Cameron, 7207 S. Bennett Ave., Chicago, Ill. 60649

Filed Oct. 1, 1979, Ser. No. 80,640

Int. Cl.³ A61K *33/06, 9/06, 31/245*

U.S. Cl. 424—154 **10 Claims**

1. The process of treating a female having uterine prolapse which comprises topically applying to the uterus an effective contracting amount of a composition consisting essentially of an alum selected from the group of aluminum ammonium sulfate and aluminum potassium sulfate, glycerine in amount sufficient to dissolve the alum, and a pharmaceutically acceptable soft solid carrier in amount sufficient to produce an ointment.

4,265,884

THERAPEUTICALLY ACTIVE POLYPEPTIDES OR ACID ADDITION SALTS THEREOF AND A PROCESS FOR PRODUCING SUCH COMPOUNDS

Hans Kofod, Lyngby, Denmark, assignor to Nordisk Insulinlaboratorium, Gentofte, Denmark

Filed Sep. 24, 1979, Ser. No. 78,425

Claims priority, application Denmark, Sep. 28, 1978, 4304/78; Sep. 5, 1979, 3710/79

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 424—177 **3 Claims**

1. Polypeptide derivatives of the general formula:

a—x—y—arg—leu—d,

wherein

y represents gln, glu or

x represents a bond, a single amino acid selected from the group consisting of leu and ser, or when y is gln

x may also represent a peptide having from 2 to 10 amino acids in their naturally occurring L-form in the chain, selected from C_{10}–C_{19} fragments of secretin, with the proviso that the C-terminal amino acid is always leu 19 (acid number 19 in the secretin sequence),

a represents hydrogen or a small protective group for the α-amino group in the N-terminal amino acid,

d represents —NR^1R^2, wherein R^1 and R^2 are selected from the group consisting of hydrogen, C_1–C_6 alkyl and C_3–C_8 cycloalkyl, or R^1 and R^2 together with the attached nitrogen atom form a heterocyclic group optionally containing a further hetero atom, or d represents —OR^3, wherein R^3 is selected from the group consisting of hydrogen, C_1–C_6 alkyl, C_3–C_8 cycloalkyl, benzyl, phenacyl, phthalimidomethyl, β-methylthioethyl, 4-picolyl and substituted benzyl, where the substituents are selected from the group consisting of nitro, methoxy, methyl, and halogen, or acid addition salts of such peptides with acids acceptable to the organism.

4,265,885

ANTHRACYCLINES CONTAINING BRANCHED-CHAIN AMINO-DEOXY SUGARS

Alberto Bargiotti, Milan; Giuseppe Cassinelli, Pavia; Federico Arcamone, and Aurelio DiMarco, both of Milan, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

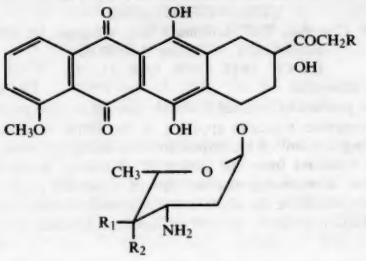
Filed Oct. 5, 1979, Ser. No. 82,293

Claims priority, application United Kingdom, Oct. 25, 1978, 41937/78

Int. Cl.³ C07H *15/24*; A61K *31/70*

U.S. Cl. 424—180 **11 Claims**

1. A compound of general formula I:



in which R represents a hydrogen atom or a hydroxy group, one of R_1 and R_2 represents a methyl group and the other of R_1 and R_2 represents a methoxy group.

11. A method for treating leukemia P_{388} in a host comprising treating the host with a therapeutically effective amount of a compound selected from the group consisting of 4'-C-methyl-4'-O-methyl-daunorubicin, 4'-epi-4'-C-methyl-4'-O-methyl-daunorubicin hydrochloride; 4-C-methyl-4'-O-methyl-doxorubicin hydrochloride and 4'-epi-4'-C-methyl-4'-O-methyl-doxorubicin hydrochloride.

4,265,886

SPIROKETALINS AND THEIR APPLICATIONS

Karl H. Pegel, Durban, South Africa, assignor to Roecar Holdings (Netherlands Antilles (NV), Amsterdam, Netherlands

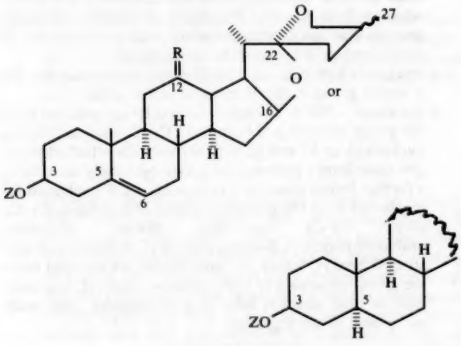
Filed Jul. 2, 1979, Ser. No. 53,736

Claims priority, application United Kingdom, Jul. 5, 1978, 28935/78

Int. Cl.[3] **A61K** *31/705, 31/70*

U.S. Cl. 424—182 **11 Claims**

1. An anti-inflammatory composition characterized in that it is in the form of a tablet or capsule and includes a pharmaceutically acceptable carrier and a compound of the formula

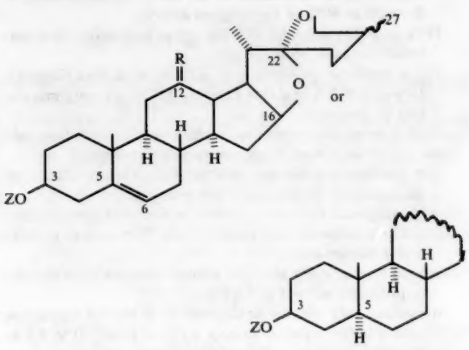


where:

1. either a double bond starts at C-5 or C-5 carries an alpha hydrogen (5d),
2. Z is a saccharide selected from the group consisting of glucose, maltose, galactose and lactose which may be partially or completely esterified with a pharmaceutically acceptable monocarboxylic acid,
3. R represents either two hydrogens or a ketonic oxygen,

in an amount sufficient to cause an anti-inflammatory action.

8. A method of treating a disease caused by an inflammatory condition characterized by the administration to the patient a composition including a pharmaceutically acceptable carrier and an anti-inflammatory effective amount of a compound of the formula



where:

1. either a double bond starts at C-5 or C-5 carries an alpha hydrogen (5d),
2. Z is a saccharide selected from the group consisting of glucose, maltose, galactose and lactose which may be partially or completely esterified with a pharmaceutically acceptable monocarboxylic acid,
3. R represents either two hydrogens or a ketonic oxygen.

4,265,887

COMPOSITION AND METHOD FOR TREATMENT OF HEMORRHOIDS

Joseph S. Breskman, 733 Spring Mill Rd., Villanova, Pa. 19085

Filed Dec. 11, 1979, Ser. No. 102,475

Int. Cl.[3] **A61K** *31/44, 31/68, 31/195, 31/525*

U.S. Cl. 424—201 **5 Claims**

1. A method of treatment of hemorrhoids which comprises orally administering to a person suffering with hemorrhoids a composition comprising:

Thiamin	1 to 15 mg
Riboflavin	1 to 10 mg
Pyridoxine	0.1 to 33 mg
Cobalamin	1 to 3 mcgm
Niacinamide	6 to 100 mg
Pantothenic Acid	1 to 50 mg

in an amount effective to impart relief from hemorrhoidal symptoms and to maintain a symptom free condition in a person suffering with hemorrhoids.

4,265,888

ACETYLSALICYLATE POWDER PREPARATION FOR INJECTION

Yoshio Kagitani, Kashiwara; Takashi Imagawa, Sakai; Hirohisa Inahara, Kyoto, and Ryozo Watanabe, Takatsuki, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Jan. 8, 1980, Ser. No. 110,753

Claims priority, application Japan, Jul. 6, 1979, 54-85596

Int. Cl.[3] **A61K** *31/615*

U.S. Cl. 424—233 **2 Claims**

1. A pharmaceutical composition comprising an effective amount of acetylsalicylate of DL-lysine characterized in that the pharmaceutical composition is a solid and contains 3–6% by weight of anhydrous calcium chloride based on the total weight of the acetylsalicylate and the anhydrous calcium chloride.

4,265,889
6-LOWER ALKYL-7,8-DIHYDROXY-1-PHENYL-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

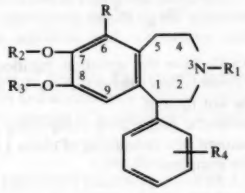
Charles K. Brush, Malvern, and Joseph Weinstock, Phoenixville, both of Pa., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 903,325, May 5, 1978, abandoned, which is a continuation-in-part of Ser. No. 852,404, Nov. 17, 1977, Pat. No. 4,165,372. This application Dec. 22, 1978, Ser. No. 972,296

Int. Cl.³ A61K *31/55;* **C07D** *223/16*

U.S. Cl. 424—244 **11 Claims**

1. A compound of the structural formula:



in which:

R is a lower straight chain alkyl of 1–6 carbons;

R_1 is hydrogen, lower alkyl of 1–5 carbons or lower alkenyl of 3–5 carbons;

R_2 and R_3 are hydrogen or lower alkanoyl of 2–5 carbons; and

R_4 is hydrogen or one or two substituents from the group consisting of trifluoromethyl, halo, methyl, methoxy, alkanoyloxy of 2–5 carbons, hydroxy or methylthio; or pharmaceutically acceptable acid addition salts thereof.

10. A method of producing dopaminergic activity in a subject in need thereof comprising administering orally or parenterally to said subject an amount of a compound of claims **1**, **2**, **3**, **4**, **5**, **6**, **7** or **8** which is effective therefore.

4,265,890
6-PHENYL THIO- AND 6-CYCLOHEXYL THIO-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINES

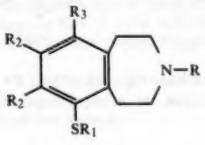
Kenneth G. Holden, Haddonfield, and Carl Kaiser, Haddon Heights, both of N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 922,613, Jul. 7, 1978, abandoned. This application May 17, 1979, Ser. No. 39,713

Int. Cl.³ A61K *31/55;* **C07D** *223/16*

U.S. Cl. 424—244 **13 Claims**

1. A compound represented by the formula:



wherein:

R is methyl, allyl, dimethylallyl, phenethyl, cyclopropylmethyl or β-hydroxyethyl;

R_1 is phenyl, m- or p-substituted phenyl with the substituent being trifluoromethyl, chloro, methoxy, methyl, fluoro, nitro or hydroxy or cyclohexyl;

R_2 is hydrogen, methoxy, alkanoyloxy with the alkanoyl moiety having from 2 to 6 carbon atoms, or hydroxy, each R_2 being the same or different except that when one of R_2 is alkanoyloxy the other is hydrogen, methoxy or alkanoyloxy; and

R_3 is hydrogen, chloro, bromo, trifluoromethyl, fluoro or methyl,

or a nontoxic pharmaceutically acceptable acid addition salt thereof.

4,265,891
PROSTANOID COMPOUNDS AND COMPOSITIONS

Eric W. Collington, Welwyn; Harry Finch, Hitchin; Roger F. Newton, Melbourn, and Christopher J. Wallis, Royston, all of England, assignors to Glaxo Group Limited, London, England

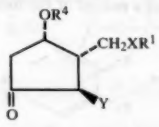
Filed Jul. 10, 1979, Ser. No. 56,416

Claims priority, application United Kingdom, Jul. 11, 1978, 29403/78

Int. Cl.³ A61K *31/55, 31/535;* **C07D** *295/14*

U.S. Cl. 424—244 **11 Claims**

1. Prostanoid compounds of the general formula:



wherein

X is cis or trans —CH=CH— or —$(CH_2)_2$—;

Y is a saturated heterocyclic amino group selected from the group consisting of pyrrolidino, piperidino, piperidino substituted by hydroxy morpholino, piperazino, thiamorpholino, 1-dioxothiamorpholino, homomorpholino, hexamethyleneimino, and piperazino substituted at the second nitrogen atom by C_{1-7} alkyl or phenalkyl having a C_{1-4} alkyl portion or any of said groups substituted by one or more C_{1-4} alkyl groups;

R^1 is straight or branched C_{1-7} alkyl bearing as a terminal substituent —$COOR^{10}$ where R^{10} is a hydrogen atom, C_{1-6} alkyl or C_{7-10} phenalkyl;

R^4 is C_{1-6} alkyl, C_{3-6} alkenyl, phenyl, benzhydryl, naphthyl-C_{1-3} alkyl, phen-C_{1-3} alkyl or phen-C_{1-3} alkyl wherein the phenyl group is substituted by a substituent selected from phenyl, halogen, C_{5-7} cycloalkyl, C_{1-6} alkyl, C_{1-6} alkoxy, cyano, amino, benzyloxy, dialkylamino, dimethylaminomethyl, thiocarboxamido and carboxamido and the physiologically-acceptable salts thereof.

10. A pharmaceutical composition comprising a bronchodilator or blood platelet aggregation inhibiting effective amount of a compound as claimed in claim **1** and one or more pharmaceutical carriers.

4,265,892
CEPHALOSPORINS HAVING AN α-ACYLAMINOACETIC ACID SIDE CHAIN

Karoly Kocsis, Basel; Heinrich Peter, and Hans Bickel, both of Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

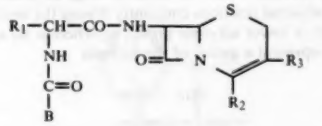
Division of Ser. No. 789,164, Apr. 20, 1977, Pat. No. 4,154,831, which is a division of Ser. No. 576,398, May 9, 1975, Pat. No. 4,041,161. This application Feb. 12, 1979, Ser. No. 11,359

Claims priority, application Switzerland, May 13, 1974, 6494/74

Int. Cl.³ A61K *31/545*

U.S. Cl. 424—246 **10 Claims**

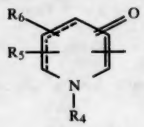
1. A compound of the formula



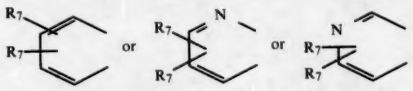
(I)

wherein R_1 denotes phenyl, thienyl, furyl, 1,4-cyclohexadienyl or hydroxyphenyl, R_2 represents a carboxyl group, R_3 repre-

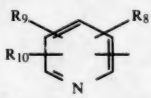
sents hydrogen, lower alkanoyloxymethyl, lower alkoxymethyl, benzoylthiomethyl, pyridiniomethyl, or pyridiniomethyl substituted on the pyridinio ring by lower alkyl, halogen, trifluoromethyl, hydroxyl, carboxyl, lower alkoxy carbonyl or carbamoyl, and B denotes a group of the formula


(B1)

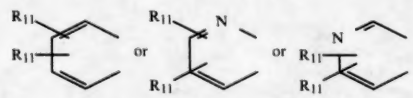
wherein R_4 denotes lower alkyl, and R_5 and R_6 substitute adjacent ring carbon atoms and conjointly represent lower alkylene, or represent a radical of the formula



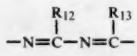
wherein the two R_7 independently of one another denote hydrogen, hydroxyl, lower alkyl, lower alkoxy, lower alkylmercapto, lower alkanoyl, lower alkanoylamino, lower alkoxycarbonyloxy, lower alkylsulphonyl, or phenyl, or wherein the two R_7 conjointly with the group —CH=CH— form a thiazole, isothiazole, pyrrole, furane or benzene ring, and wherein the broken line denotes a 4,5- or 5,6-double bond, of B denotes a group of the formula


(B2)

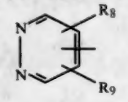
wherein R_8 denotes free hydroxyl or mercapto, lower alkoxy, lower alkylthio, lower alkanoyloxy, lower alkanoylthio, free amino, mono-lower alkylated amino, di-lower alkylated amino, lower alkanoylated amino, carbamoylated amino or halogen, wherein R_9 represents hydrogen or has the meaning of R_8 or represents nitrile, lower alkyl, hydroxyl-lower alkyl, lower alkanoyl, phenyl, or phenylcarbonyl, wherein R_{10} represents hydrogen, nitrile, lower alkyl, lower alkanoyl or phenyl, or wherein R_9 and R_{10} conjointly represent lower alkylene, or wherein R_9 and R_{10} substitute adjacent ring carbon atoms and conjointly represent a radical of the formula



wherein the two R_{11} independently of one another denote hydrogen, hydroxyl, lower alkyl, lower alkyl substituted by halogen, lower alkoxy, lowr alkanoyloxy, mercapto, lower alkylmercapto, lower alkanoyl, amino, mono- or di-lower alkylamino, lower alkanoylamino, lower alkoxycarbonylamino, lower alkoxycarbonylamino substituted by phenyl, lower alkylsulphonyl, or phenyl, or wherein the two R_{11} conjointly with the group —CH=CH— form a thiazole, isothiazole, pyrrole, furane or benzene ring, or wherein the two R_{11} in adjacent positions conjointly denote the methylenedioxy group or lower alkylene group, or wherein R_9 and R_{10} conjointly represent a group of the formula



wherein R_{12} denotes hydrogen, hydroxyl lower alkyl, lower alkoxy, amino, mono-lower alkylamino, di-lower alkylamino, lower alkoxycarbonylamino, or lower alkoxycarbonylamino substituted by phenyl, or B denotes a group of the formula


(B3)

wherein R_8 and R_9 have the meanings mentioned under the formula B_2, or B denotes a group of the formula

(B4)

wherein R_8 and R_9 have the meanings mentioned under formula B_2, or a formula tautomeric thereto, or a pharmaceutically acceptable salt thereof.

7. A pharmaceutical preparation comprising an antibacterially effective amount of a compound of claim 1 and a pharmaceutically usable excipient.

4,265,893

DIURETIC COMPOSITIONS

Adam Daum, Basel, Switzerland; Michel Fernex, Biederthal, and Alexander E. Wick, Le Mesnil-le Roy, both of France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

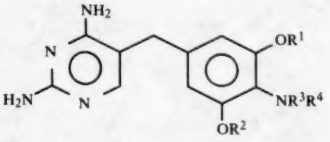
Filed Sep. 5, 1979, Ser. No. 72,771

Claims priority, application Switzerland, Sep. 12, 1978, 9547/78

Int. Cl.[3] **A61K** *31/54, 31/505*

U.S. Cl. 424—246 **4 Claims**

1. A method of inducing diuresis which comprises administering a composition which contains a diuretically effective amount of a potassium-flushing diuretic agent selected from the group consisting of hydrochlorothiazide, hydroflumethiazide, trichlormethiazide, thiabuzide, polythiazide, cyclopenthiazide, quinethazone, and ethacrynic acid and an amount in the range of from about 1 mg to 20 mg of a potassium-retaining compound, said potassium-retaining compound is a compound of the formula



wherein R^1 and R^2 are C_{1-6}-alkyl, and R^3 and R^4, independently, are hydrogen, or a physiologically compatible salt thereof.

4,265,894

PIPERAZINE DERIVATIVES

Johan Gootjes, Heerhugowaard, Netherlands, assignor to Gist Brocades, N.V., Delft, Netherlands

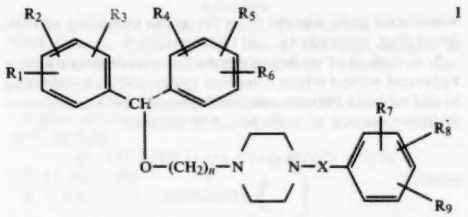
Division of Ser. No. 860,460, Dec. 14, 1977, Pat. No. 4,202,896. This application Nov. 1, 1979, Ser. No. 90,257

Claims priority, application United Kingdom, Dec. 14, 1976, 52223/76

Int. Cl.[3] **A61K** *31/495;* **C07D** *295/02*

U.S. Cl. 424—250 **21 Claims**

1. A compound of the formula



wherein R_1–R_9 are the same or different and each represents a hydrogen of halogen atom or a lower alkyl or lower alkoxy group, n is 2 or 3 and X represents the group —CH_2—CH=CH—, having methylene linked to the piperazine group, and nontoxic acid addition and quaternary ammonium salts thereof.

21. A method of treating Parkinson's disease prolactin induced disorders and acromegaly which comprises administering an effective amount of a compound defined in claim **1**.

4,265,895
1,2-DIHYDRO-5-PYRIDINYL-3H-PYRAZOLO[3,4-b]PYRIDIN-3-ONES AND THEIR USE AS CARDIOTONICS

George Y. Lesher, and Monte D. Gruett, both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Mar. 17, 1980, Ser. No. 130,623
Int. Cl.³ C07D *471/02;* A61K *31/415*
U.S. Cl. 424—256 **13 Claims**

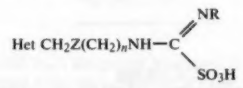
9. The method for increasing cardiac contractility in a patient requiring such treatment which comprises administering orally or parenterally in a solid or liquid dosage form to such patient an effective amount for increasing cardiac contractility of the cardiotonic 1,2-dihydro-1-R-5-PY-5-Q-3H-pyrazolo[3,4-b]pyridin-3-one or pharmaceutically-acceptable acid-addition salt thereof where R is lower-alkyl, lower-hydroxyalkyl having from two or six carbon atoms, 2,3-dihydroxypropyl or lower-alkoxyalkyl having from three to six carbon atoms, Q is hydrogen or lower-alkyl, PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents, and where lower-alkyl, all occurrences not specifically defined above, contains from one to six carbon atoms.

4,265,896
AMIDINOSULPHONIC ACID DERIVATIVES

Graham J. Durant, Welwyn Garden City; Rodney C. Young, Bengeo, both of England, and Zev Tashma, Jerusalem, Israel, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

Division of Ser. No. 940,063, Sep. 6, 1978, Pat. No. 4,210,658. This application Nov. 5, 1979, Ser. No. 90,949
Claims priority, application United Kingdom, Sep. 8, 1977, 37468/77
Int. Cl.³ C07D *213/32;* A61K *31/44*
U.S. Cl. 424—263 **4 Claims**

1. A compound of the formula:



where Het is a pyridyl optionally substituted by lower alkyl, hydroxy, lower alkoxy, halogen, trifluoromethyl, hydroxymethyl or amino; Z is sulphur or methylene; n is 2 or 3 and R is hydrogen, lower alkyl or Het $CH_2Z(CH_2)_n$—, wherein Het, Z and n are as defined above, in neutral form or in the form of a pharmaceutically acceptable salt thereof.

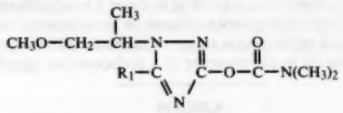
4. A method of blocking histamine H_2-receptors which comprises administering to an animal an effective amount to block said receptors of a compound of claim **1**.

4,265,897
N-N-DIMETHYL-1-(1'-METHYL-2'-METHOXYETHYL)-1,2,4-TRIAZOLYLCARBAMATES

Laurenz Gsell, Basel; Peter Ackermann, Reinach, and Rudolf Wehrli, Rheinfelden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 5, 1979, Ser. No. 91,631
Claims priority, application Switzerland, Nov. 14, 1978, 11690/78
Int. Cl.³ A01N *43/64;* C07D *249/12*
U.S. Cl. 424—269 **8 Claims**

1. A compound of the formula



wherein R_1 is hydrogen, chlorine, C_1–C_4-alkyl, C_1–C_4-alkoxy or C_1–C_4-alkylthio.

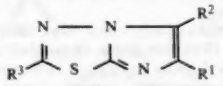
8. A method for combatting insects and acarids which comprises applying thereto an insecticidally or acaricidally effective amount of a compound according to claim **1**.

4,265,898
IMIDAZO[2,1,-b]-[1,3,4]-THIADIAZOLE COMPOUNDS, COMPOSITION AND THEIR MEDICINAL USE

Harald Horstmann, Wuppertal, Fed. Rep. of Germany; Karl-August Meng, deceased, late of Wuppertal, Fed. Rep. of Germany (by Ilse Heide Frieda Meng, legal representative); by Matthias Meng, legal representative, wuppertal, Fed. Rep. of Germany; Friedel Seuter, Wuppertal, Fed. Rep. of Germany, and Eike Möller, Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 10, 1979, Ser. No. 37,626
Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823686
Int. Cl.³ A61K *31/41;* C07D *513/04*
U.S. Cl. 424—270 **21 Claims**

1. An imidazo-2,1-b]-[1,3,4]-thiadiazole of the formula (I)

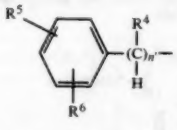


or its therapeutically useful salts in which

R^1 denotes phenyl, biphenyl or naphthyl each of which is optionally substituted by 1 or 2 identical or different substituents selected from halogen, trifluoromethyl, alkyl or alkenyl with up to 6 carbon atoms, alkoxy with 1 to 6 carbon atoms, nitro, cyano, sulphonamido optionally substituted on the N atom by C_1–C_4-alkyl and SO_n-alkyl (N is 0, 1 or 2) wherein alkyl has 1 to 4 carbon atoms,

R^2 denotes hydrogen, alkyl or alkenyl with up to 6 carbon atoms or phenyl, biphenyl or naphthyl each of which is optionally substituted by halogen; alkyl, alkenyl or alkoxy each having up to 6 carbon atoms, and

R^3 denotes naphthyl or furyl, which is optionally substituted by 1 or 2 alkyl radicals having 1 to 6 carbon atoms, or a radical of the formula



in which

n' is 0, or 1,

R^4 denotes hydrogen or methyl,

R^5 denotes halogen, alkyl or alkenyl having up to 6 carbon atoms, phenyl or trifluoromethyl, hydroxyl, alkoxy or $SO_{n''}$-alkyl (n'' is 0, 1 or 2) wherein the alkyl portion contains up to 6 carbon atoms, alkanoyloxy with 1 to 4 carbon atoms, alkoxylenecarboxyl with 1 to 4 carbon atoms in the alkyl moiety or alkoxyenecarbalkoxy with 1 to 4 carbon atoms in each alkyl moiety or nitro, cyano, carboxyl or C_1–C_4-carbalkoxy, and

R^6 denotes hydrogen or halogen or alkyl, alkenyl or alkoxy each having up to 6 carbon atoms.

12. A pharmaceutical composition containing as an active ingredient an antithrombotically or thrombolytically effective amount of a compound according to claim **1** in admixture with a solid or liquefied gaseous diluent or in admixture with a liquid diluent other than a solvent of a molecular weight less than 200 except in the presence of a surface-active agent.

4,265,899
COSMETIC FORMULATION COMPRISING 3-ISOTHIAZOLONES

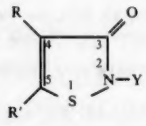
Sheldon N. Lewis, Willow Grove; George A. Miller, Glenside, and Andrew B. Law, Levittown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 910,730, May 30, 1978, which is a division of Ser. No. 368,168, Jun. 8, 1973, Pat. No. 4,105,431, which is a continuation-in-part of Ser. No. 836,660, Jun. 25, 1969, Pat. No. 3,761,488, which is a continuation-in-part of Ser. No. 672,437, Oct. 3, 1967, Pat. No. 3,523,121, which is a continuation-in-part of Ser. No. 621,780, Mar. 9, 1967, abandoned. This application Dec. 10, 1979, Ser. No. 101,596

Int. Cl.[3] **A01N** *43/80*

U.S. Cl. 424—270 **5 Claims**

1. A cosmetic formulation which comprises a cosmetic agent, a surfactant, and a fungicidally or a bactericidally effective amount of a compound of the formula



wherein

Y is an unsubstituted or substituted alkyl, alkenyl, or alkynyl group of 1 to 18 carbon atoms, an unsubstituted or substituted cycloalkyl group having a 3 to 6 carbon atom ring and up to 12 carbon atoms, an unsubstituted or substituted aralkyl group of up to 10 carbon atoms, or an unsubstituted or substituted aryl group of up to 10 carbon atoms,

R is hydrogen, halogen, or a (C_1–C_4)alkyl group,

and

R' is hydrogen, halogen, or a (C_1–C_4)alkyl group, or a salt of a compound of the above formula with a strong acid.

4,265,900
N-ARYL-N'-IMIDAZOL-2-YLUREAS

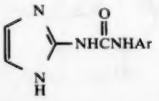
C. Royce Rasmussen, Ambler, and Henry I. Jacoby, Rydal, both of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Filed Oct. 29, 1979, Ser. No. 88,880

Int. Cl.[3] **A61K** *31/415;* **C07D** *233/88*

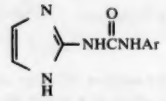
U.S. Cl. 424—273 R **11 Claims**

1. A member selected from the group consisting of an imidazolylurea of formula



and the pharmaceutically-acceptable strong acid addition salts thereof wherein Ar is phenyl substituted with from one to two substituents each selected from the group consisting of halo, loweralkyl, loweralkoxy, and trifluoromethyl.

9. A method of inhibiting gastric acid secretion in a gastric hyperacid subject which comprises systemically administering to said subject a therapeutically effective gastric acid secretion inhibiting amount of a compound of formula



or a pharmaceutically-acceptable strong acid addition salt thereof, wherein Ar is phenyl substituted with from 1 to 2 substituents each selected from the group consisting of halo, loweralkyl, loweralkoxy, and trifluoromethyl; provided that Ar is other than 3-chlorophenyl.

4,265,901
2-OXYBENZIMIDAZOLINE COMPOUNDS

George O. P. O'Doherty, Greenfield, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

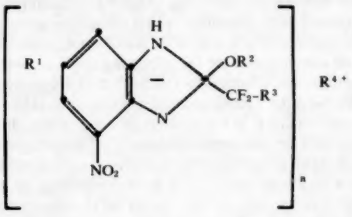
Filed Dec. 26, 1979, Ser. No. 106,990

Int. Cl.[3] **A61K** *31/415;* **A01N** *43/52;* **C07D** *235/26*

U.S. Cl. 424—273 B **28 Claims**

I claim

1. A Compound of the formula



wherein:

R^1 represents bromo, chloro, or trifluoromethyl;

R^2 represents hydrogen or loweralkyl of C_1–C_4;

R^3 represents hydrogen, fluoro, difluoromethyl, or trifluoromethyl;

R^4 represents sodium, potassium, lithium, silver, calcium, ammonium, or substituted ammonium derived from an organic amine which is as basic as, or more basic than, ammonia; and

n represents the valence of R^4; or an R^2OH solvate thereof.

11. Method of inhibiting insect and acarina parasites which consume tissues of a warm blooded host animal which comprises administering to the host animal an effective amount of an active agent which is a compound of claim **1**.

4,265,902
THERAPEUTIC TREATMENT OF HORSES

William Van Ewijk, Haarlem, Netherlands, assignor to Tetra Consultants, Inc., New Rochelle, N.Y.

Filed Apr. 3, 1980, Ser. No. 136,903

Int. Cl.[3] **A61K** *31/415*

U.S. Cl. 424—273 R **5 Claims**

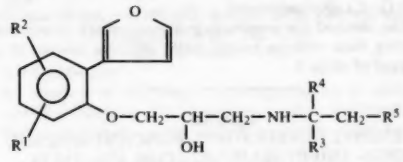
1. A method of therapeutically treating horses suffering from tail and mane eczema which comprises, systemically administering, over a period of time, to a horse suffering from tail and mane eczema a small but effective amount of allantoin.

4,265,903
ARYL-SUBSTITUTED FURNACES

Erich Cohnen, Hamburg, Fed. Rep. of Germany, assignor to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

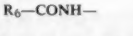
Filed Mar. 31, 1980, Ser. No. 135,954
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1979, 2914166
Int. Cl.³ A61K *31/34;* **C07D** *307/42, 307/54*
U.S. Cl. 424—282 **7 Claims**

1. A compound of the formula



(I)

wherein R_1 and R_2 may be the same or different and are selected from hydrogen, halogen, alkyl groups and acylamino groups having 1 to 4 carbon atoms, R_3 and R_4 may be the same or different and are selected from hydrogen and methyl, R_5 is selected from hydrogen, dimethoxyphenyl and an acylamino group of the formula



wherein R_6 is selected from alkyl having 1 to 4 carbon atoms and pharmaceutically acceptable acid addition salts thereof.

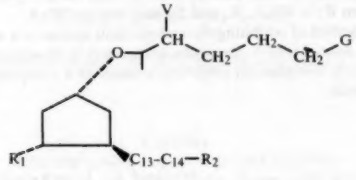
6. A method for lowering the blood pressure of a warm blooded animal comprising administering to said animal a therapeutically effective amount of the compound of claim **1**.

4,265,904
PROSTACYCLIN ANALOGS OF THE 1 SERIES AND RELATED ANALOGS

Charles V. Grudzinskas, Nyack; Allan Wissner, Ardsley, both of N.Y., and Sow-Mei L. Chen, Park Ridge, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 7, 1979, Ser. No. 46,515
Int. Cl.³ A01K *31/557;* **C07D** *307/935*
U.S. Cl. 424—285 **86 Claims**

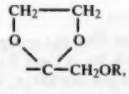
1. A compound of the formula:

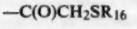


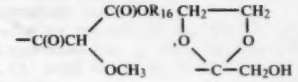
wherein

V is selected from the group hydrogen, bromo and chloro;

G is selected from the group —C(O)OR, —CH_2OH, —C(O)CH_2OR, —C(O)CH_2OH,

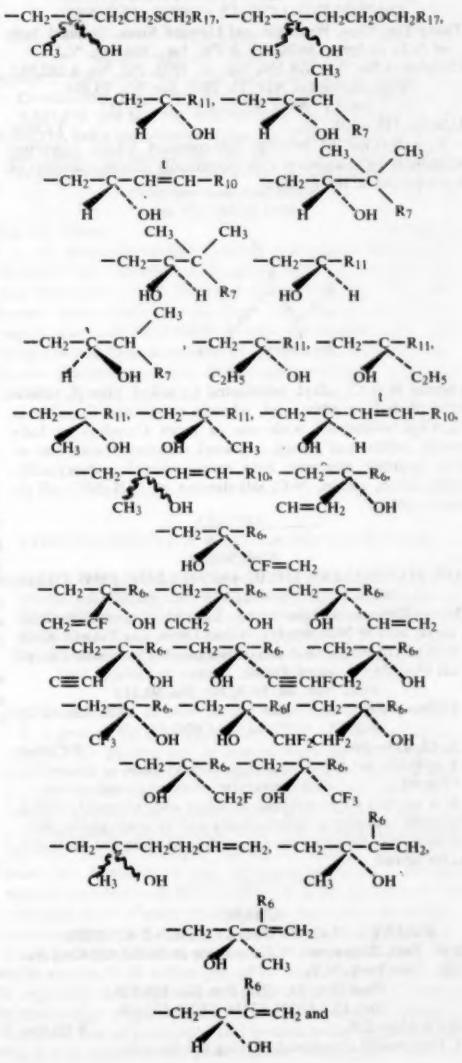






and —C(O)OH wherein R_1 is hydrogen or hydroxy, R is C_1 to C_6 alkyl, or optionally substituted phenyl, wherein the substituents are selected from the group C_1 to C_4 alkyl, C_1 to C_4 alkoxy, halo and trifluoromethyl and R_{16} is C_1 to C_6 alkyl;

C_{13}–C_{14} is selected from the group —CH=CH-(trans) and —CH_2CH_2—; and R_2 is selected from the group



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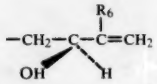


wherein
R_6 is C_3 to C_5 alkyl;
R_7 is C_2 to C_4 alkyl;
R_{10} is C_1 to C_4 alkyl;
R_{11} is C_3 to C_7 alkyl;
R_{17} is hydrogen, methyl or ethyl;
the racemic mixture thereof; the mirror image thereof; and the pharmaceutically acceptable, non-toxic salts thereof.

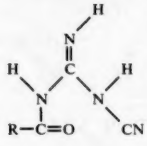
4,265,905

METHOD OF TREATING INFLAMMATION EMPLOYING ACYL CYANOGUANIDINES

Tsung-Ying Shen, Westfield, and Howard Jones, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 618,108, Sep. 30, 1975, Pat. No. 4,202,903. This application Nov. 13, 1979, Ser. No. 93,404
Int. Cl.³ A61K *31/275, 31/16, 31/165*
U.S. Cl. 424—304 **1 Claim**

1. A method of treating inflammation which comprises administering to a patient a therapeutically effective amount of a compound of the formula:



I

wherein R is C_{1-7}alkyl, substituted C_{1-7}alkyl, phenyl, substituted phenyl, or adamantyl, wherein substituted C_{1-7}alkyl is C_{1-7}alkyl substituted with one or more C_{1-3}alkyl or halo groups, substituted phenyl is phenyl substituted with one or more hydroxy, mercapto, halo, cyano, phenyl, carboxymethylthio, nitro, amino, N-C_{1-5}alkylamino or N,N-di(C_{1-5}alkyl-)amino groups.

4,265,906

LOW MAMMALIAN TOXIC AND/OR LOW FISH TOXIC INSECTICIDES AND/OR ACARICIDES

Kiyoshi Kasamatsu, Takarazuka; Tadashi Ohsumi; Nobushige Itaya, both of Nishinomiya; Nobuo Ohno, and Takashi Kato, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Nov. 20, 1979, Ser. No. 96,212
Claims priority, application Japan, Nov. 22, 1978, 53-144709
Int. Cl.³ A01N *53/00;* **C07C** *121/75*
U.S. Cl. 424—304 **5 Claims**

1. m-(p-Bromophenoxy)-α-cyanobenzyl trans- or trans-rich-2,2-dimethyl-3-(2,2-dichlorovinyl)cyclopropanecarboxylate.

4. A method for controlling an insect and/or acaride which comprises applying an insecticidally and/or acaricidally effective amount of the compound according to claim **1** to the insect and/or acarid.

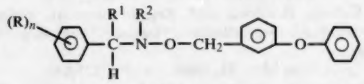
4,265,907

INSECTICIDAL HYDROXYLAMINE ETHERS

Jill H. Paul, Edgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,925
Int. Cl.³ A01N *37/34;* **C07C** *127/19*
U.S. Cl. 424—304 **9 Claims**

1. Insecticidal compounds having the formula:



wherein R is halogen (Cl, F, Br), C_1–C_4 akyl, NO_2, C_1–C_4 alkoxy, C_1–C_4 alkylthio, cyano, CF_3, CF_3O, CF_3S, ClF_2, CHF_2O, or CHF_2S; n is 0, 1, or 2; R_1 is C_1–C_4 alkyl, C_3–C_6 cycloalkyl, alkyl substituted C_3–C_6 cycloalkyl, or C_2–C_4 alkenyl; and R^2 is cyano, carbamoyl, N–C_1–C_4 alkylcarbamoyl, or N,N-di C_1–C_4 alkylcarbamoyl.

7. The method for combatting insects which comprises contacting them with an insecticidally effective amount of a compound of claim **1**.

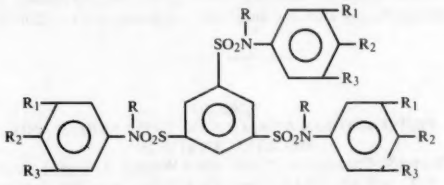
4,265,908

S-PHENENYLTRIS(SULFONYLIMINO)TRI-BENZENE MONO- AND DI-SULFONIC ACIDS AND SALTS COMPLEMENT INHIBITORS

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

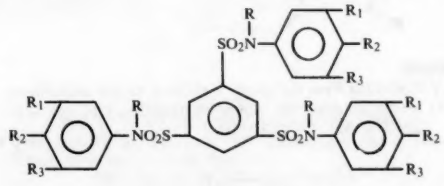
Division of Ser. No. 973,313, Dec. 26, 1978, Pat. No. 4,208,346. This application Dec. 17, 1979, Ser. No. 104,614
Int. Cl.³ A61K *31/185*
U.S. Cl. 424—315 **11 Claims**

1. A method of inhibiting the complement system in a body fluid which comprises subjecting said body fluid to the action of an effective complement inhibiting amount of a compound of the formula:



wherein each R is selected from the group consisting of hydrogen and alkali metal; each R_1, R_2 and R_3 is selected from the group consisting of hydrogen and SO_3A, wherein A is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; provided that at least one of the R_1, R_2 and R_3 groups on each phenyl is SO_3A; and further provided that when R_2 is SO_3A, R_1 and R_3 may not be SO_3A.

5. A method of inhibiting the complement system in a warm-blooded animal which comprises administering to said animal an effective complement inhibiting amount of a compound of the formula:



wherein each R is selected from the group consisting of hydrogen and alkali metal; each R_1, R_2 and R_3 is selected from the group consisting of hydrogen and SO_3A, wherein A is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; provided that at least one of the R_1, R_2

and R_3 groups on each phenyl is SO_3A; and further provided that when R_2 is SO_3A, R_1 and R_3 may not be SO_3A.

4,265,909

INHIBITING PLATELET AGGREGATION WITH SUBSTITUTED ACETANILIDES

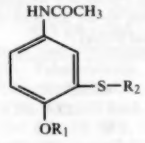
David J. Jollow, 716 North Shore Dr., Charlestown, S.C. 29412, and Perry V. Halushka, 1391 Cecilia Dr., Charlestown, S.C. 29407

Division of Ser. No. 919,282, Jun. 26, 1978. This application Feb. 6, 1979, Ser. No. 9,911

Int. Cl.³ A61K *31/165*

U.S. Cl. 424—324 **2 Claims**

1. a method of inhibiting platelet aggregation in mammals comprising administering to said mammals a therapeutically effective amount of a compound of the general formula:



wherein each of R_1 and R_2 represents a hydrogen atom or a lower alkyl group having from one to three carbon atoms.

4,265,910

ISOPRENYLAMINES

Yoshiyuki Tahara, Ohi; Hiroyasu Koyama, Ageo; Yasuhiro Komatsu, Niiza; Reiko Kubota, Tokyo, and Toshihiro Takahashi, Kamifukuoka, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

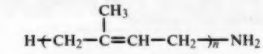
Filed May 1, 1980, Ser. No. 145,754

Claims Priority, Application Japan, May 4, 1979, 54-54016, Japan, Nov. 19, 1979, 54-148819

Int. Cl.³ A61K *31/13;* **C07C** *87/24*

U.S. Cl. 424—325 **5 Claims**

1. Isoprenylamine represented by the following general formula



wherein n is 9, 10 or 11, or acid addition salts thereof.

4,265,911

PROPIONAMIDOXIME DERIVATIVES

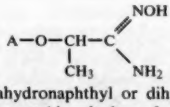
Henry Najer, Paris, and Daniel Obitz, Orsay, both of France, assignors to Synthelabo, Paris, France

Filed Oct. 9, 1979, Ser. No. 82,656

Int. Cl.³ A61K *31/155;* **C07C** *123/00*

U.S. Cl. 424—326 **6 Claims**

1. A compound of the formula:



wherein A is tetrahydronaphthyl or dihydronaphthyl, or a pharmaceutically acceptable salt thereof.

4,265,912

GLAUCINE LACTATE SALTS

Samuel S. M. Wang, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 935,220, Aug. 21, 1978, abandoned. This application Nov. 13, 1979, Ser. No. 93,648

Int. Cl.³ A61K *31/485;* **C07D** *221/18, 221/22*

U.S. Cl. 424—260 **8 Claims**

1. A glaucine salt selected from the group consisting of l-glaucine lactate, d,l-glaucine lactate and mixtures thereof.

6. A method of alleviating coughing in animals, comprising administering to an animal an antitussive amount of a glaucine salt selected from the group consisting of l-glaucine lactate, d,l-glaucine lactate and mixtures thereof.

4,265,913

ORAL INGESTA FOR ANIMALS

Robert J. Eichelburg, Woodland Rd., Pound Ridge, N.Y. 10576

Continuation of Ser. No. 448,208, Mar. 5, 1974, Pat. No. 3,997,675, and Ser. No. 463,314, Apr. 23, 1974, Pat. No. 4,000,319, and a continuation of Ser. No. 473,347, May 28, 1974, abandoned. This application Jan. 28, 1976, Ser. No. 653,214

The portion of the term of this patent subsequent to Dec. 28, 1993, has been disclaimed.

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—2 **10 Claims**

1. As an article of manufacture, oral ingesta for animals selected from a member of the group consisting of dog food, dog medicaments, cat food and cat medicaments, said oral ingesta being combined with yeast in an amount sufficient to impart improved palatability to said oral ingesta, said yeast being selected from a member of the group consisting of the genera Saccharomycodes, Schizosaccharomyces, and Oosporidium.

4,265,914

CONTINUOUS-FLOW WINE CHAMPAGNIZATION PROCESS

Naskid G. Sarishvili, ulitsa Khalturinskaya, 11, kv. 231; Alla E. Oreshkina, Krymsky val, 8, kv. 37, and Evgeny N. Storchevoi, Nakhimovsky prospekt, 9, korpus 1, kv. 59, all of Moscow, U.S.S.R.

Continuation of Ser. No. 658,097, Feb. 13, 1976, abandoned. This application Apr. 27, 1977, Ser. No. 791,167

Int. Cl.³ C12G *1/06*

U.S. Cl. 426—13 **1 Claim**

1. A process for champagnization of wine which comprises continuously passing for secondary fermentation a starting fermentation broth consisting essentially of champagne winestock, saccharose and yeast cells at a temperature of up to 15° C. through a yeast mass located on a separator which retains the yeast cells which are deposited thereon by sedimentation from the wine stream, whereby during the passage through for secondary fermentation the champagnized wine is simultaneously enriched with biologically active substances from the yeast and freed of yeast cells while the yeast mass increases in concentration; and continuing the passing of fermentation broth through said yeast mass until the concentration of yeast cells reaches 5–10 billion per ml of wine, thus continuously completely champagnizing said wine stock in about 17 days to obtain a high output of ready to use champagnized wine substantially free of yeast cells, said process being continued during a time period of 2–3 years without recharging.

4,265,915

PROTEIN-CONTAINING FOOD MATERIAL

Mary E. MacLennan, and Martial Lawson, both of 198 Parkes St., Helensburgh, New South Wales 2508, Australia

Filed Nov. 3, 1978, Ser. No. 957,380
Claims priority, application Australia, Nov. 8, 1977, PD2345
Int. Cl.[3] A23J *1/12;* C12D *13/06*
U.S. Cl. 426—28 29 Claims

1. In a process for preparing a protein-containing product by cultivating an amylolytic fungus on a solid substrate comprising a solid carbohydrate source and a nitrogen source, the improvement which comprises the steps of:

(a) providing a particulate starch-based material which does or does not include a nitrogen source;

(b) partially gelatinizing the starch component of said material in the presence of water to a particulate substrate composed of particles of which a predominant proportion have a particle size wherein the overall dimension is within the range of 0.5 mm to 3 mm, with the proviso that particles of larger dimensions are not present in sufficient quantity to be substantially visible in the fermented product;

(c) adding a nitrogen source if the nitrogen source in step (a) is absent or insufficient, before, during or after step (b) whilst maintaining the physical state of said substrate;

(d) inoculating said substrate with at least one amylolytic fungal strain;

(e) incubating said inoculated substrate in the presence of oxygen and moisture until substantially all particles of the starch-based material are substantially degraded to a non-particulate form and the spaces originally occupied by the starch-based substrate particles and containing the starch degradation products are closely bound together by a network of mycelia; and

(f) denaturing the products of steps (e) wherein said nitrogen source is assimilable by said fungal strain(s), and is present in a total amount which is non-inhibitory and sufficient to allow adequate mycelial growth in step (e), and, if said nitrogen source is particulate, the predominant proportion has a particle size wherein the overall dimension is less than 2.5 mm with the proviso that particles of larger dimensions are not present in sufficient quantity to be substantially visible in the fermented product.

4,265,916

ANIMAL FEED BLOCK CONTAINING FERROUS SULFATE AND FINELY GROUND MAGNESIUM OXIDE

Leroy V. Skoch, Manchester; Bud G. Harmon, Kirkwood; Charles W. Dickerson, Des Peres, all of Mo., and Nelson S. Chou, Kingston, R.I., assignors to Ralson Purina Company, St. Louis, Mo.

Filed Jan. 23, 1979, Ser. No. 5,887
Int. Cl.[3] A23K *1/00*
U.S. Cl. 426—74 36 Claims

1. A process for preparing a molasses based animal feed block which comprises admixing molasses, nutritive ingredients, about 5 to about 10% by weight of a phosphorous source, and water absorbent clay with about 2 to about 4% by weight ferrous sulfate and about 3.5 to about 15% by weight finely ground magnesium oxide having a surface area greater than 11 m^2/gm under high speed shearing action to obtain a nutrient mixture that solidifies to form a hard, weather resistant block.

4,265,917

BINDER COMPOSITIONS FOR TEXTURIZED PROTEINS AND THEIR USE IN THE PREPARATION OF FOODSTUFF

Albert Fabre, Venissieux, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed May 1, 1978, Ser. No. 901,828
Claims priority, application France, May 4, 1977, 77 14310
Int. Cl.[3] A23J *3/00*
U.S. Cl. 426—104 28 Claims

1. A foodstuff having a protein efficiency coefficient of about that of milk casein, comprising a texturized proteins selected from the group consisting of vegetable proteins, animal proteins, and mixtures thereof, impregnated with an amount of a binder material sufficient to bind said texturized protein together and to improve the nutritive properties and protein balance of said texturized protein in order to provide an amino acid balanced foodstuff, said binder material comprising (i) from 10 to 20% by dry weight of unmodified, undenatured gluten, (ii) from 10 to 20% by dry weight of dairy seroproteins, (iii) from 1 to 5% by dry weight of albumin, and (iv) an edible liquid diluent in an amount sufficient to provide 100% by weight of said binder.

4,265,918

PREPARATION OF PARTIALLY DEHYDRATED MEAT PRODUCTS

Theodore V. Kueper, LaGrange; Warren R. Schack, Western Springs, and Harry Rock, Wood Dale, all of Ill., assignors to Swift & Company, Chicago, Ill.

Filed Jan. 19, 1979, Ser. No. 4,727
Int. Cl.[3] A23B *4/02;* A23L *1/31*
U.S. Cl. 426—264 4 Claims

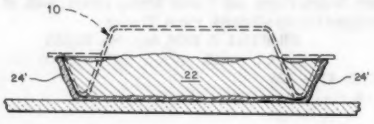
1. An improved method for preparing a sliced meat product for cooking and consumption, said method comprising: first hydrating a meat product with a curing pickle solution to 105%–125% of its original weight and subsequently partially dehydrating said meat product to 70%–95% of said original weight at leat in part by vacuum drying said meat product from a hydrated weight in excess of said original weight to a lower weight not in excess of 95% of said original weight, said vacuum drying being carried out while said product is maintained in a non-frozen state, and without appreciably changing the other components of the meat product, and slicing said product either before or after it is subjected to said dehydrating environment whereby said slices when subjected to cooking temperature will reach a level of doneness in a relatively shorter period of time and will have a relatively greater yield of edible meat than the same sliced product that is not subjected to said partial dehydration.

4,265,919

PROCESS FOR PRODUCING A FOOD PRODUCT

Arnold M. Munter, and David W. Ahlgren, both of Duluth, Minn., assignors to Jeno's, Inc., Duluth, Minn.

Filed Jun. 2, 1980, Ser. No. 155,567
Int. Cl.[3] A21D *8/02*
U.S. Cl. 426—283 6 Claims



1. A process for producing a frozen, pre-prepared food product, comprising the following steps in the order recited:

providing an inedible, heatable container having a centrally-depressed receptacle which is defined by a base at the bottom of the container and sidewalls and with an out-

wardly and downwardly extending rim adjacent said sidewalls and terminating in a free edge;

depositing a pre-prepared filling which becomes fluid when a sufficient amount of heat is applied to it into said container directly onto said depressed receptacle;

covering said container receptacle and said container rim with a sheet of unbaked dough and shaping the dough so that said dough conforms to said outwardly and downwardly extending container rim so that upon baking, an inverted edible receptacle is formed including sidewalls and a centrally depressed bottom which will retain the filling when said edible receptacle is positioned such that its depressed bottom is lowermost;

freezing the now-filled and covered container whereby when the product is heated, said dough bakes while said filling heats to a fluid state so that when the product is inverted and said container is removed, said filling flows outwardly to fill the upstanding crust formed by the now-baked dough.

4,265,920

PROCESS FOR CONCENTRATION OF ALCOHOLIC BEVERAGES

Henricus A. C. Thijssen, Son, Netherlands, assignor to Douwe Egberts Koninklijke Tabaksfabriek, Koffiebranderijen en Theehandel B.V., Utrecht, Netherlands

Continuation of Ser. No. 885,347, Mar. 10, 1978, abandoned. This application Sep. 28, 1979, Ser. No. 80,776

Claims priority, application United Kingdom, Mar. 19, 1977, 11713/77

Int. Cl.[3] **C12G** *3/08, 1/00;* **C12F** *3/04*

U.S. Cl. 426—384 **4 Claims**

1. Process for the concentration of aqueous alcoholic beverage solutions, containing in addition to nonvolatile components, alcohol and small amounts of volatile aroma components by the selective removal of water, comprising the following steps:

(a) a first step in which substantially all of the alcohol and the more volatile aroma components are separated by a process of distillation at strongly reduced pressure, from the bulk of the aqueous solution and in which the vapors containing alcohol and more volatile aroma components obtained by said distillation process are condensed in a condenser,

(b) a second step in which the aqueous solution obtained in step (a), is concentrated by removing water in a process of freeze concentration while retaining in the solution the aroma components remaining from step a), and

(c) a third step in which the condensate containing alcohol and more volatile aroma components obtained in step (a), is mixed with the concentrate obtained in step (b).

4,265,921

PROCESS FOR QUICK-FREEZING OF FOOD PRODUCTS

André Lermuzeaux, Sucy-en-Brie, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude l'Ecploitation des Procedes Georges Claude, Paris, France

Filed Apr. 18, 1978, Ser. No. 897,534

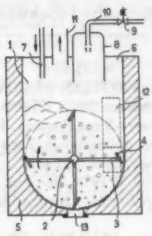
Claims priority, application France, Apr. 25, 1977, 77 12339

Int. Cl.[3] **A23L** *3/36*

U.S. Cl. 426—444 **11 Claims**

1. A process for quick-freezing of food products by mixing a liquid or pasty food product with an excess of carbon dioxide snow, comprising

forming a carbon dioxide snow bed in situ by feeding carbon dioxide liquid under pressure to a zone of lower pressure where it expands and solidifies, while applying a mixing force to the expanding and solidifying carbon dioxide, and adding to said snow bed the food product to be frozen and thereby bringing the food product into contact with the carbon dioxide snow particles by mixing with a mixing means so that the food product in paste or liquid state is divided on contact with the carbon dioxide snow and is quickly frozen, the linear speed of the mixing means being 0.3–2 m/sec.,



maintaining mixing until frozen granules of said food product having a stabilized temperature between −70° and −18° C. are formed, and

then removing the frozen granules.

4,265,922

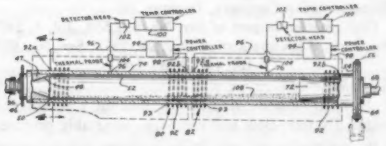
INDUCTION HEATING METHOD FOR PROCESSING FOOD MATERIAL

Takuzo Tsuchiya, Minneapolis; Jin-Liou Fang, New Hope, and Glen Rasmussen, Champlin, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 31, 1979, Ser. No. 8,219

Int. Cl.[3] **A23L** *101*

U.S. Cl. 426—520 **5 Claims**



1. A method of processing food material comprising the steps of rotating a metallic barrel, introducing the food material into one end of said barrel, discharging said food material from the other end of said barrel, and inductively heating at a relatively low frequency at least a portion of said barrel as it rotates so that heat is first induced in said barrel and is then transmitted by conduction from said barrel into said food material as said food material passes through said barrel, said barrel being rotated within a pair of solenoid-type coils to provide said inductive heating and including the step of individually energizing said coils.

4,265,923

USE OF CYCLOHEXENEMETHANOLS IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF FOODSTUFFS

Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 46,363, Jun. 7, 1979, Pat. No. 4,217,371, which is a division of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Nov. 2, 1979, Ser. No. 90,691

Int. Cl.[3] **A23L** *1/226, 1/235*

U.S. Cl. 426—538 **5 Claims**

1. A process for augmenting or enhancing the aroma or taste of a foodstuff comprising the step of adding to a foodstuff from about 0.05 ppm up to about 500 ppm based on total weight of foodstuff of at least one cyclohexenemethanol selected from the group consisting of:

(i) alpha-allyl-4-methyl-3-cyclohexenemethanol,
(ii) 2,4-dimethyl-alpha-allyl-3-cyclohexenemethanol,
(iii) 2,4-dimethyl-alpha-isopropyl-3-cyclohexene-1-methanol, and
(iv) 4,6-dimethyl-alpha-allyl-3-cyclohexenemethanol.

4,265,924

WHEY PROTEIN RECOVERY

Marcel Buhler, Tolochenaz; Mats Olofsson, Yverdon, both of Switzerland, and Pierre-Yves Fosseux, Pont-Hebert, France, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed May 7, 1979, Ser. No. 36,427
Claims priority, application Switzerland, May 11, 1978, 5134/78
Int. Cl.[3] A23J *3/00*
U.S. Cl. 426—582 15 Claims

1. A process for recovering proteins from lactoserum, which comprises subjecting a lactoserum to a heat treatment to denature the proteins to an extent of about 35 to 70% by weight of the proteins present in it, separating the denatured proteins from the other non-fat constituents of the lactoserum by ultrafiltration, said proteins being found in the ultrafiltration retentate along with undenatured proteins, and subjecting the retentate to a complementary heat treatment for a time and temperature sufficient for denaturing the undenatured proteins.

4,265,925

BLAND VEGETABLE PROTEIN PRODUCT AND METHOD OF MANUFACTURE

Michael F. Campbell; Richard J. Fiala; James D. Wideman, and John F. Rasche, all of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of Ser. No. 812,551, Jul. 5, 1977, abandoned. This application Dec. 26, 1978, Ser. No. 973,194
Int. Cl.[3] A23J *3/00*
U.S. Cl. 426—641 18 Claims

1. In a continuous method for making a bland, defatted, substantially flavorless and odor-free vegetable protein product by removing solvent from a moist, solvent-containing vegetable protein material, said method comprising the steps of:

(a) continuously supplying said moist vegetable protein material to a desolventizing apparatus having a gas inlet and outlet; (b) continuously flowing a humid, inert gas through said protein material at a velocity sufficient to fluidize said vegetable protein material and to move it as a fluidized bed;

(c) moving said vegetable protein material in the stream of inert gas through a tortuous path whereby all particles of said vegetable protein material are subjected to steady fluidizing action;

(d) maintaining the temperature of said inert inlet gas below 260° F. (127° C.) and its velocity and pressure sufficient to sustain intimate mixing with the vegetable protein material to maintain said vegetable protein material in a fluidized state and to remove solvent therefrom during the course of the tortuous path;

(e) maintaining the dewpoint at the gas inlet of said desolventizing apparatus in the range of 100°–140° F. (37.8°–60° C.) and the dewpoint at the gas outlet of said desolventizing apparatus in the range of 130°–155° F. (54.4°–68.3° C.);

(f) controlling the flow rate of said vegetable protein material along said tortuous path so that the average time the particles of vegetable protein material remain in contact with said humid, inert gas is from 1–6 hours, whereby the vegetable protein material is effectively continuously desolventized to a level below about 2,000 ppm solvent as measured by gas liquid chromatograph; and

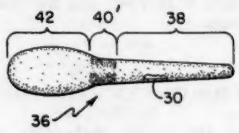
(g) continuously separating desolventized vegetable protein material from the inert gas.

4,265,926

METHOD OF TREATING GELATIN CAPSULES AND PRODUCT RESULTING THEREFROM

George S. Sperti, 1842 Madison Rd., Cincinnati, Ohio 45206, and Norbert J. Berberick, Jr., 2550 Idlewild Rd., Burlington, Ky. 41005

Continuation of Ser. No. 788,276, Apr. 18, 1977, abandoned, which is a continuation of Ser. No. 697,570, Jun. 18, 1976, Pat. No. 4,027,671, which is a continuation of Ser. No. 605,523, Aug. 18, 1975, abandoned, which is a continuation of Ser. No. 511,947, Oct. 4, 1974, abandoned, which is a continuation of Ser. No. 341,261, Mar. 14, 1973, abandoned, which is a continuation of Ser. No. 82,742, Oct. 21, 1970, abandoned. This application Feb. 10, 1978, Ser. No. 876,711
Int. Cl.[3] A61J *3/07*
U.S. Cl. 427—2 10 Claims



1. A method for treating gelatin capsules having a bulb portion and an elongated portion comprising the step of applying a softening agent tto the bulb portion of the capsule to provide a difference in hardness between the bulb portion and the elongated portion wherein the elongated portion is of sufficient rigidity to be insertable through a body orifice and the bulb portion may be squeezed when the capsule is so inserted whereby a medicament contained therein is forced out the elongated portion.

4,265,927

METHOD OF HEPARINIZING A CHARGED SURFACE OF A MEDICAL ARTICLE INTENDED FOR BLOOD CONTACT

Jan C. Ericksson, Djursholm, and Rolf L. Larsson, Ekerö, both of Sweden, assignors to Aminkemi AB, Bromma, Sweden

Filed Jul. 10, 1978, Ser. No. 922,992
Claims priority, application Sweden, Jul. 18, 1977, 7708296
Int. Cl.[3] A01N *43/16*
U.S. Cl. 427—2 11 Claims

1. A method of heparinizing a charged surface of a medical article intended for contact with blood, comprising contacting a charged surface thereof with a fine-grained colloidal aqueous solution of a complex compound of the components (i) heparin and (ii) a cationic surfactant, the particles of said colloidal solution having a size below 200 nm and having attached to their surfaces, charges of a polarity opposite to that of the charges attached to the surface of the medical article, the colloidal solution containing 1–100 I.U. of heparin per ml, the relative quantity of cationic surfactant in relation to the quantity of heparin being so adjusted that the light transmission of the colloidal solution at a wavelength of 400 nm and 1 cm optical passage exceeds about 40% of that pure water if the heparin content of the colloidal solution is 50 I.U. per ml, and exceeds about 90% of that of pure water if the heparin content of the colloidal solution is 10 I.U. per ml.

4,265,928

ANTI-THROMBOGENIC RETENTIVE CATHETER

Bernd Braun, Melsungen, Fed. Rep. of Germany, assignor to Intermedicat GmbH, Emmenbrucke, Switzerland

Filed Sep. 26, 1979, Ser. No. 78,918

Claims priority, application Switzerland, Oct. 6, 1978, 10439/78

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—2 **9 Claims**

1. A method of producing an anti-thrombogenic retentive catheter with a negatively charged surface, which comprises coating a polyvinylchloride or polyethylene catheter with a solution in pyridine, or a solvent mixture of toluol and tetrahydrofuran, of a copolymerizate of ethylene with acrylic acid, or an ester or salt of the copolymerizate.

4,265,929

SINGLE-BAKE TWO-LAYER ENAMELLING WITH ELECTROSTATIC POWDER COATING

Gebhard Wagner, Odenthal, and Werner Joseph, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 936,990, Aug. 25, 1979, abandoned. This application Nov. 21, 1979, Ser. No. 96,368

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1977, 2741971

Int. Cl.³ B05D *1/06*

U.S. Cl. 427—33 **6 Claims**

1. In a two-layer enamelling process in which the ground coat and surface powders are electrostatically applied to metallic substrates and subsequently baked together, the improvement which comprises employing a ground coat powder having an electrical resistivity of about 10^{10} to 10^{14} ohm.cm and a surface coat powder having an electrical resistivity of about 10^{14} to 10^{16} ohm.cm and at least 10^2 ohm.cm higher than the ground coat.

4,265,930

PROCESS FOR PRODUCING OXYGEN SENSING ELEMENT

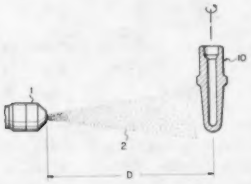
Hiroshi Shinohara, Okazaki; Yasuhiro Otsuka, Toyota; Shinichi Matsumoto, Toyota; Toshinobu Furutani, Toyota, and Hiroshi Wakizaka, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 19, 1979, Ser. No. 50,057

Claims priority, application Japan, Oct. 23, 1978, 53/129446

Int. Cl.³ B05D *1/08, 5/12*

U.S. Cl. 427—34 **6 Claims**



1. A process for producing an oxygen sensing element suitable for use in a combustion exhaust gas purifying system comprising an ion-conducting tubular solid electrolyte member composed of a sintered material and closed at one end, a first metal electrode layer deposited on the inner surface of the solid electrolyte member, a second metal electrode layer deposited on the outer surface of the solid electrolyte member, and a protective layer of a refractory material deposited on the surface of the second metal electrode layer, which process comprises forming the protective layer onto the surface of the second metal electrode layer by plasma spray coating the surface of the second electrode layer, first with a refractory material powder from a plasma spray coating device, and at a position of a prescribed distance from a plasma spray coating device and at a prescribed electric power, said distance and power being such that a durable protective layer is formed, and second with a refractory material powder having the same particle size and composition as said refractory material powder used in the first plasma spray coating at a position of a distance greater than said prescribed distance and/or at an electric power lower than said prescribed electric power.

4,265,931

PROCESS FOR THE PRODUCTION OF A MAGNETIC RECORDING MEMBER

Yasuo Tamai, and Hiroshi Ogawa, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 903,333, May 5, 1978, abandoned, which is a continuation of Ser. No. 816,067, Jul. 15, 1977, abandoned, which is a continuation of Ser. No. 626,690, Oct. 29, 1975, abandoned. This application Sep. 10, 1979, Ser. No. 74,029

Claims priority, application Japan, Oct. 29, 1974, 49-125196

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—48 **8 Claims**

1. A process for producing a magnetic recording medium comprising a non-magnetic support and two magnetic layers which comprise a ferromagnetic powder and a binder, one magnetic layer being a lower magnetic layer about 3 to 20 um in thickness and being coated on said non-magnetic support and the other magnetic layer being an upper magnetic layer coated on said lower magnetic layer, said upper magnetic layer being 0.5 to 6 um in thickness and being thinner than the lower magnetic layer, the upper magnetic layer containing ferromagnetic powder having a coercive force at least 1.2 times higher than the coercive force of the ferromagnetic powder in the lower magnetic layer; which process comprises the sequential, separate and distinct steps of:

(A) forming the lower magnetic layer on said support by coating a lower magnetic coating composition having a binder component which is a thermosetting resin on said non-magnetic support, orienting the ferromagnetic powders in said lower magnetic coating composition during coating, drying the composition and calendering the dried composition;

(B) contacting said lower magnetic layer with an organic solvent incapable of dissolving said lower magnetic layer such that the amount of said solvent present in the lower layer as the result of said contact is 15 to 120% by weight based on the total dry weight of the lower layer so that the lower layer is not solved but the surface of the lower layer is wet and each pore therein is filled with the solvent, or the binder of the lower layer is not solved but swollen;

(C) forming an upper magnetic layer on said lower layer by coating an upper magnetic coating composition on said lower magnetic layer, and drying said upper composition containing the organic solvent of step (B), a binder soluble in said organic solvent which is selected from the group of resins consisting of thermoplastics resins, thermosetting resins and mixtures thereof, and a lubricant.

4,265,932

MOBILE TRANSPARENT WINDOW APPARATUS AND METHOD FOR PHOTOCHEMICAL VAPOR DEPOSITION

John W. Peters, Malibu, and Frank L. Gebhart, Long Beach, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 2, 1979, Ser. No. 63,213

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—53.1 **9 Claims**

1. Apparatus for the photochemical vapor deposition of a layer of a selected material on the surface of a chosen substrate comprising:

(a) a reaction chamber having a quartz window integral with

the top surface thereof, for the transmission of a selected wavelength of radiation therethrough into said reaction chamber;

(b) a film of predetermined material that is movable across the internal face of said quartz window within said reaction chamber, said predetermined material being transparent to said selected wavelength of radiation, stable at the elevated temperature required for said deposition, and possessing sufficient mechanical strength to be moved across said quartz window;

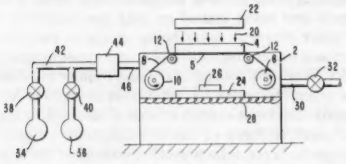
(c) means affixed within said reaction chamber for moving said film across said internal face of said quartz window;

(d) means external to said reaction chamber and associated therewith for introducing a reactant gas mixture into said reaction chamber;

(e) means located within said reaction chamber for heating said substrate;

(f) means external to said reaction chamber for producing radiation of said selected wavelength and introducing said radiation into said reaction chamber through said quartz window; and

(g) means external to said reaction chamber for producing a vacuum in said reaction chamber of sufficiently low pressure to enable said deposition to occur, whereby said film



at said internal face of said quartz window during the deposition process prevents undesirable deposits of said selected material on said internal face of said quartz window and said moving of said film across said internal face removes said selected material deposited on said film from close proximity to said internal face, thereby maintaining said window in a clean and transparent state and enhancing the efficiency of said deposition.

8. A method for maximizing the radiation-induced rate of photochemical vapor deposition within an enclosed chamber which is sustaining said deposition, including:

(a) providing a radiation-transparent window and film on one wall of said chamber;

(b) passing radiation of a chosen wavelength through both said window and said film and into said chamber to induce a photochemical vapor deposition reaction therein, while simultaneously causing extraneous deposition of reaction products on said film; and

(c) providing continuous relative movement between said window and said film to thereby minimize the resistance to the transmission of said radiation into said chamber caused by extraneous deposits of said reaction products and thus maximize the efficiency and rate of said vapor deposition reaction occuring therein.

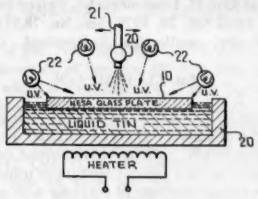
4,265,933

PHOTOVOLTAIC CELL

John P. Jordan, El Paso, Tex., and Curtis Lampkin, Cincinnati, Ohio, assignors to Photon Power, Inc., El Paso, Tex.

Continuation of Ser. No. 645,461, Dec. 30, 1975, abandoned.
This application Sep. 22, 1977, Ser. No. 835,515
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—54.1 **2 Claims**

1. A method of enhancing the growth of CdS microcrystals, comprising the step of uniformly heating a nucleating substrate to a temperature effective to promote CdS crystal growth in a layer of microcrystalline CdS on said substrate, and irradiating said layer of microcyrstalline CdS with high intensity ultra-violet light during said heating to improve



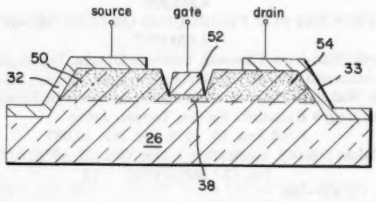
uniformity of crystal axis orientation during said CdS crystal growth.

4,265,934

METHOD FOR MAKING IMPROVED SCHOTTKY-BARRIER GATE GALLIUM ARSENIDE FIELD EFFECT DEVICES

Glenn O. Ladd, Jr., Agoura, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 640,124, Dec. 12, 1975, abandoned.
This application Feb. 21, 1978, Ser. No. 879,651
Int. Cl.[3] H01L *21/302, 29/48*
U.S. Cl. 427—84 **13 Claims**



1. A process for fabricating a field effect transistor structure comprising the steps of:

(a) providing a substrate of semi-insulating gallium arsenide;

(b) forming a conducting channel on a surface of said substrate and defining a substrate-conducting channel interface;

(c) establishing source and drain ohmic contacts on predetermined portions of a surface of said conducting channel, said portions defining a source region and a drain region respectively of said transistor structure;

(d) controllably etching a cavity in said conducting channel between said source and drain ohmic contacts, said cavity having angled side walls and an adjoining bottom wall defining a trapezoidal shaped inverted mesa region and said angled side walls extending to said surface of said conducting channel at edges remote from said source and drain ohmic contacts, whereby a conducting channel region is formed that is relatively thin with respect to said source region and said drain region; and

(e) depositing a gate electrode member primarily on said bottom wall of said cavity and with minimal contact with said side walls for minimizing parasitic coupling between said gate electrode member and said conducting channel.

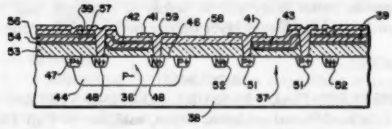
4,265,935
HIGH TEMPERATURE REFRACTORY METAL CONTACT ASSEMBLY AND MULTIPLE LAYER INTERCONNECT STRUCTURE

John H. Hall, Saratoga, Calif., assignor to Micro Power Systems Inc., Santa Clara, Calif.

Division of Ser. No. 791,798, Apr. 28, 1977, Pat. No. 4,152,823, which is a continuation of Ser. No. 384,640, Aug. 1, 1973, abandoned. This application Feb. 22, 1979, Ser. No. 14,256

Int. Cl.³ H01L *21/88*

U.S. Cl. 427—89 **2 Claims**



1. A method for forming an integrated circuit structure comprising the steps of:

providing a silicon body having a surface,

forming a first insulating layer on at least a portion of the surface of the silicon body,

forming a refractory metal sandwich at least over a portion of said insulating layer,

formation of said sandwich including solely the steps of forming a first layer of silicon, and

forming a refractory metal layer on the silicon layer and forming a second silicon layer on the upper surface of the refractory metal layer.

4,265,936
VEHICLE REFINISHING PROCESS

Theodore Prohaska, Jr., 6940 Winterwood La., Dallas, Tex. 75248

Filed Aug. 18, 1978, Ser. No. 934,853

Int. Cl.³ B05D *1/38, 3/00, 7/16*

U.S. Cl. 427—140 **10 Claims**

1. The process of repainting a vehicle surface comprising preparing the surface for reception of a color coating, applying at least one coat of a color coating onto said prepared surface, drying said color coating, applying a standard automotive clear paint toner finish coat over the color coat, and drying said finish coating, said color coating being a mixture of a automotive acrylic enamel, acrylic thinner, and a automotive clear paint toner in amounts to give a DuPont cup viscosity reading of about 16 to 21 seconds at 125° F., and said color coating and finish coating being heated to a temperature of about 115°–135° F. just prior to application.

4,265,937
METHOD FOR PRODUCING A COLORED REFLECTIVE PLATE HAVING EXCELLENT DURABILITY AND FABRICABILITY

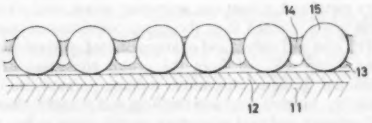
Toru Kameya, Ichikawa; Shinichi Makino, Narashino, and Masayuki Tsuruta, Ichikawa, all of Japan, assignors to Taiyo Steel Co., Ltd., Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,781

Claims priority, application Japan, Aug. 28, 1978, 53-104521

Int. Cl.³ G02B *5/128*

U.S. Cl. 427—163 **6 Claims**



1. A method for producing a colored reflective plate comprising coating a colored paint on a base plate to form a primary colored layer, coating or printing a colored paint on said primary colored layer to form an intermediate colored layer in a thickness in a range from 30 to 80% of the mean radius of glass beads to be coated subsequently thereon, scattering glass beads having a refractive index in a range from 1.9 to 2.1 on the surface of said intermediate colored layer, removing the excess of glass beads unadhered on said intermediate colored layer, pressing the remaining glass beads in said intermediate colored layer until said beads contact said primary colored layer, drying said intermediate colored layer, coating a clear paint in the cavities among said glass beads so as to bury said glass beads in said intermediate colored layer and said clear paint up to a depth from 40 to 80% of the mean diameter of said beads as calculated in the dried condition, and drying and curing said clear paint.

4,265,938
RETRO-REFLECTING SHEET MATERIAL AND METHOD OF MAKING SAME

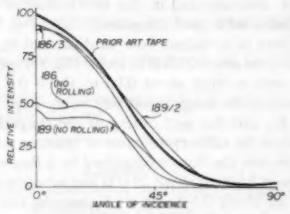
Stanton E. Jack, and Robert O. Dark, both of Kingston, Canada, assignors to Alcan Research & Development Limited, Montreal, Canada

Filed Sep. 13, 1979, Ser. No. 75,007

Claims priority, application Canada, Sep. 21, 1978, 311780

Int. Cl.³ G02B *5/128;* **B05D** *5/06, 7/14*

U.S. Cl. 427—163 **13 Claims**



1. A method of forming a retro-reflective surface on an indentable metal substrate, comprising the steps of:

(a) forming on said indentable metal substrate a layer of transparent organic polymeric material having a monolayer coating of substantially spherical glass beads of high refractive index;

(b) covering said beads with a platen having substantially no tendency to adhere to the glass beads under the pressures encountered;

(c) applying sufficient pressure to said platen and indentable metal substrate to cause the glass beads to indent the surface of said indentable metal substrate; and

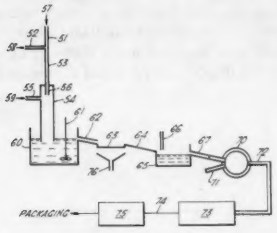
(d) covering said beaded layer with a further layer of transparent organic polymeric material;

said transparent organic polymeric material formed on the indentable metal substrate in step (a) being suitable to withstand the pressure of step (c) without substantial crazing, cracking or attenuation, and the thickness of said layer being sufficient to space said beads from said substrate by a predetermined distance suitable for retro-reflection after step (c).

4,265,939
PARTICULATE RUBBER PROCESS

Klaas Tebbens; Erhardt Fischer, both of Sarnia, Canada, and Jhy-Dou R. Lo, Pittsfield, Mass., assignors to Polysar Limited, Sarnia, Canada

Filed Dec. 5, 1979, Ser. No. 100,396
Claims priority, application Canada, Jul. 19, 1979, 332149
Int. Cl.³ B44D *1/02*
U.S. Cl. 427—222 **13 Claims**



1. An improved process for the manufacture of particulate rubber which process comprises the steps of mixing an aqueous latex of a C_4–C_6 conjugated diolefin-containing rubbery polymer, said latex containing from about 10 to about 35 weight percent of said polymer, with an aqueous inorganic acid or inorganic salt coagulation agent, mixing the coagulated polymer particles so formed with a dilute aqueous latex of a rubbery-resinous or resinous styrene-containing polymer whereby the coagulated polymer particles are coated with the rubbery-resinous or resinous polymer, said dilute latex containing from about 1 to about 5 weight percent of said rubbery-resinous or resinous polymer and the quantity of said dilute latex being such as to provide from about 5 to about 15 parts by weight of rubbery-resinous or resinous polymer per 100 parts by weight of rubbery polymer, and separating and recovering the particulate rubber, characterized in that said mixing of said rubbery polymer latex with said coagulation agent is in a conduit wherein there is turbulent flow as described by a Reynolds Number of from about 25,000 to about 100,000 and wherein the residence time is from about 0.05 to about 0.5 seconds, the temperature of the coagulation step being from about 49° to about 99° C., and that said mixing of the coagulated polymer particles with the rubbery-resinous or resinous polymer is in a conduit wherein the flow is described by a Reynolds Number of from about 5,000 to about 25,000 and wherein the residence time is from about 0.5 to about 5 seconds, the temperature being from about 82° to about 99° C.

4,265,940
PRESSURE APPLYING ROLLERS FOR INSTANT PHOTOGRAPHIC CAMERAS AND METHOD OF PRODUCING THE SAME

Kenichi Kato, Sano, Japan, assignor to Fuji Photo Optical Co., Ltd. and Sano Kiko Co., Ltd., both of, Japan

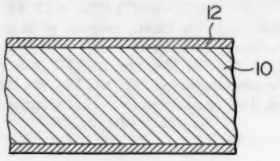
Continuation-in-part of Ser. No. 890,918, Jun. 23, 1978, abandoned. This application Aug. 3, 1979, Ser. No. 63,459
Claims priority, application Japan, Apr. 4, 1977, 52-38224
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—292 **2 Claims**

1. A method of producing a roller of the type useable as either one of a pair of pressure applying rollers adapted to be used in an instant photographic camera, said method comprising the steps of:

making a roller body having predetermined dimensions,

forming fine surface irregularities on the surface of said roller body, and thereafter

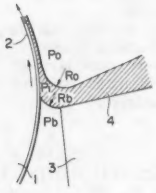
electroless depositing nickel by reduction separation on the surface of said roller body to form a plated layer of nickel of uniform thickness thereon using the roller itself as a catalyst, whereby said roller is produced without hardening the roller body per se before it is plated, and heat hardening the plated layer on the surface of the roller.



4,265,941
DIFFERENTIAL PRESSURE COATING SYSTEM

Hiroki Saito, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 26, 1979, Ser. No. 52,513
Claims priority, application Japan, Jun. 26, 1978, 53/77267
Int. Cl.³ B05D *3/00, 3/12;* C23C *13/08*
U.S. Cl. 427—296 **9 Claims**



1. A method of coating a web with a bead of coating material comprising the steps of feeding a supply of coating material onto said web to form a bead, applying a first negative pressure at position to be rear of the point of application of said coating material and, applying a second pressure, lower than said first negative pressure, at marginal side portions of the bead at the point of application of said coating material on to said web.

4,265,942
NON-NOBLE METAL COLLOIDAL COMPOSITIONS COMPRISING REACTION PRODUCTS FOR ELECTROLESS DEPOSITION

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Continuation-in-part of Ser. No. 672,044, Mar. 30, 1976, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application Aug. 31, 1978, Ser. No. 938,890
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—304 **59 Claims**

1. A process for the preparation of a non-conductor substrate for electroless (chemical) deposition onto a substrate comprising the steps of:

(1) contacting said substrate with a colloidal composition said colloidal composition being the reaction product resulting from the admixture comprising at least one primary metal and at least one secondary metal, said primary metal being selected from the group consisting of copper, nickel, iron and cobalt and mixtures therof, said secondary metal being selected from the group consisting of tin, aluminum, gallium, chromium, indium, germanium, lead, antimony, bismuth zinc and thallium and mixtures thereof, said primary and said secondary metals being in less than the maximum available oxidation state in said colloidal composition which is retained on the surface of said sub-

strate either directly forms or serves as a precursor to the catalytic sites capable of electroless plating initiation, and

(2) contacting said treated substrate with an electroless (chemical) plating bath.

4,265,943

METHOD AND COMPOSITION FOR CONTINUOUS ELECTROLESS COPPER DEPOSITION USING A HYPOPHOSPHITE REDUCING AGENT IN THE PRESENCE OF COBALT OR NICKEL IONS

Rachel Goldstein, Givataim, Israel; Peter E. Kukanskis, Watertown, and John J. Grunwald, New Haven, both of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed Nov. 27, 1978, Ser. No. 964,128
Int. Cl.³ C23C *3/02*
U.S. Cl. 427—305 **18 Claims**

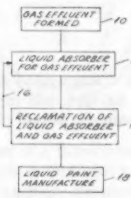
1. In a composition for the electroless deposition of copper including, in an essentially alkaline aqueous solution, a soluble source of cupric ions, a complexing agent to maintain the cupric ions in solution and a reducing agent capable of providing a soluble source of hypophosphite ions effective to reduce the cupric ions to metallic copper to obtain satisfactory copper deposition on the prepared surface of a workpiece when in contact with the solution, the improvement therein providing continuous deposition of the copper on the workpiece such that the deposition thickness increases with time at a substantially constant rate similar to an initial deposition rate comprising including in the solution a soluble source of metal ions other than cupric ions which ions are capable of functioning as an autocatalysis promoter for metallic copper deposition, the metal ions in solution being predominantly cupric ions and the solution pH being maintained in the range of 11–14.

4,265,944

METHOD FOR DECREASING POLLUTION RESULTING FROM THE APPLICATION OF A COATING COMPOSITION

James W. Garner, Farmington Hills, Mich., assignor to Grow Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 739,203, Nov. 8, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,948
Int. Cl.³ B05D *3/00*; B01D *47/00, 47/05*
U.S. Cl. 427—353 **4 Claims**



1. A method for decreasing air pollution resulting from the application of coating compositions comprising the steps of:

1. applying to a substrate an organic solvent based coating composition containing a completely water miscible organic based solvent thinner composition, thereby forming a gaseous effluent containing a mixture of air and gaseous organic solvent and gaseous thinner, wherein the water miscible organic based solvent thinner composition is comprised of:

(a) a water miscible compound selected from the group consisting of a saturated aliphatic glycol or a saturated aliphatic glycol ether, both containing at least three carbon atoms, and a compound containing Formula I:

$$R—O[CH_2(R_1)—O]_nR_2 \quad I$$

wherein

R is independently selected from the group consisting of hydrogen, alkyl of from 1 to 4 carbon atoms and —(O)C—CH_3;

R_1 is independently selected from the group consisting of —CH_2, —CH_2—CH_2—, —CH_2—$CH(CH_3)$—, and —$CH(CH_2OH)$—;

R_2 is independently selected from the group consisting of alkyl of from 1 to 4 carbon atoms, hydroxyl substituted alkyl of from 1 to 4 carbon atoms and —(O)-C—CH_3; and

n is a number from 1 to 4; and

mixtures thereof, in an amount ranging from about 10 to about 60 parts by weight (PBW);

(b) a water miscible monoalcohol having from 1 to about 8 carbon atoms, in an amount of about 10 to about 60 PBW; and

(c) a water miscible saturated aliphatic ketone of up to 12 carbon atoms in an amount of about 10 to about 50 PBW, the total of a+b+c equaling 100 PBW; and

2. passing said gaseous effluent into a gas absorbing means containing a non-reactive liquid solvent which can absorb the gaseous organic solvent of the coating composition and the gaseous thinner composition.

4,265,945

QUATERNARY UREIDOMETHYL PHOSPHONIUM SALTS

Arlen W. Frank, Slidell, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 27,696, Apr. 6, 1979. This application Nov. 29, 1979, Ser. No. 98,459
Int. Cl.³ C07F *9/22*; C07C *127/15*; C09K *3/28*; B05D *3/00*
U.S. Cl. 427—353 **2 Claims**

1. A process for imparting flame-retardant character to a cellulosic textile comprising:

(a) impregnating the cellulosic textile with an approximately 1:1 molar mixture of octakis(ureidomethyl)diphosphonium sulfate and octakis(hydroxymethyl)diphosphonium sulfate in water;

(b) squeezing the impregnated textile to about 100% wet pick-up;

(c) curing the impregnated textile for about 10 minutes at about 100° C.; and

(d) rinsing the cured cellulosic textile in hot water to remove the unreacted chemicals.

4,265,946

PROCESS FOR FORMING A SUBBING LAYER ON A PLASTIC SUPPORT

Masao Yabe; Sumitaka Tatsuta; Takeji Ochiai; Tamotsu Suzuki, all of Fujinomiya, and Masayoshi Sekiya, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara and Nippon Zeon Co., Ltd., Tokyo, both of, Japan

Filed Nov. 13, 1979, Ser. No. 93,468
Claims priority, application Japan, Nov. 13, 1978, 53/139581
Int. Cl.³ B05D *3/02*; G03C *1/78*
U.S. Cl. 427—393.5 **14 Claims**

1. In a process for forming a subbing layer by applying an aqueous dispersion of a copolymer consisting of at least one diolefin monomer and one or more vinyl monomers to a plastic film base for photographic sensitive materials, the improvement which comprises the gel fraction of the copolymer in said aqueous dispersion is about 80% by weight or less and wherein said diolefin is selected from the group consisting of butadiene, isoprene, chloroprene, 1,4-pentadiene, 1,4-hexadiene, 3-vinyl-1,5-hexadiene, 1,5-hexadiene, 3-methyl-1,5-hexadiene, 3,4-dimethyl-1,5-hexadiene, 1,2-divinylcyclobutane, 1,6-heptadiene, 3,5-diethyl-1,5-heptadiene, 4-cyclohexyl-1,6-heptadiene, 3-(4-pentenyl)-1-cyclopentene, 1,7-octadiene, 1,8-nonadiene, 1,9-decadiene, 1,9-octadecadiene, 1-cis-9-cis 12-octadecatriene, 1,10-undecadiene, 1,11-dodecadiene, 1,12-tridecadiene, 1,13-tetradecadiene, 1,14-pentadecadiene, 1,15-hexadecadiene, 1,17-

octadecadiene and 1,21-docosadiene and wherein said vinyl monomer is selected from the group consisting of styrene and derivatives thereof, acrylonitrile, methyl methacrylate, vinyl chloride, vinyl acetate, acrylic acid, methacrylic acid, itaconic acid, alkyl acrylates, acrylamide, methacrylamide, acrolein, methacrolein, glycidyl acrylate, glycidyl methacrylate, 2-hydroxyethyl acrylate, 3-hydroxyethyl methacrylate, allyl acrylate, allyl methacrylate, N-methylolated acrylamide, N-methylolated methacrylamide, divinylbenzene, vinyl isocyanate and allyl isocyanate.

4,265,947

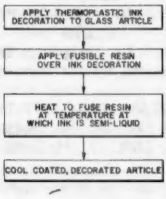
THERMOPLASTIC INK DECORATED, POLYMER COATED GLASS ARTICLES

Herbert C. Shank, Jr., Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Continuation of Ser. No. 573,809, May 2, 1975, abandoned, which is a division of Ser. No. 440,331, Feb. 7, 1974, Pat. No. 3,937,854, which is a continuation-in-part of Ser. No. 378,493, Jul. 12, 1973, Pat. No. 3,937,853. This application Mar. 7, 1977, Ser. No. 775,184

Int. Cl.[3] **B65D** *1/00*

U.S. Cl. 428—35 **6 Claims**


APPLY THERMOPLASTIC INK DECORATION TO GLASS ARTICLE
APPLY FUSIBLE RESIN OVER INK DECORATION
HEAT TO FUSE RESIN AT TEMPERATURE AT WHICH INK IS SEMI-LIQUID
COOL COATED, DECORATED ARTICLE

1. A permanently decorated, polymer coated hollow glass container,

said container having a surface area thereof with at least one screen print decoration on it,

said decoration being a thermoplastic hot melt ink which is solid at room temperature and which becomes semiliquid upon heating,

a polymer film coating on said container which overlies said decoration and which covers regions of said container adjacent to the said surface area on which the decoration is applied,

an interdiffused zone of said decoration and said polymer coating lying between the decoration and the coating,

said decoration having an adherence to the glass which is sufficient, in the absence of such polymer coating, to permit such coating to be applied over the decoration without smearing the latter, the adherence of the decoration to the glass being insufficient, in the absence of said polymer coating, to resist removal by such abrasion and alkali attack as is incidental to the ordinary use of the container,

said polymer coating being a smooth, continuous film of a resin which is anchored to and supported by the glass surface regions with which it is in contact,

the said decoration being meltable at a temperature below that at which the said polymer coating is fusible,

the said decoration being melt-on-melt bonded with and diffused into the polymer coating in said interdiffused zone such that the decoration would be at least partially removed with the polymer coating if the latter were peeled away from the container,

the coating over the surface area of said container which is covered by said decoration being adhered to the glass surface through its bond to the said decoration,

said decoration being captured by and between the film coating and the glass surface.

4,265,948

COLLAPSIBLE DISPENSING TUBE

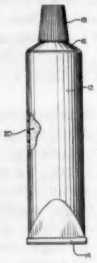
Thomas H. Hayes, and Lewis C. Lo Maglio, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 849,084, Nov. 7, 1977, Pat. No. 4,142,630. This application Oct. 10, 1978, Ser. No. 950,072

The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.

Int. Cl.[3] **B65D** *35/00, 85/14*

U.S. Cl. 428—35 **32 Claims**



1. A collapsible dispensing container having a laminated tubular body, said laminated tubular body including a fluid impervious metal foil lamination, a layer of a polyolefin on the outside of said metal foil lamination, and, on the inside of said metal foil lamination and on the outside of said polyolefin layer, a layer of a copolymer resulting from the polymerization of 100 parts by weight of a mixture of (a) from 70 to 95 percent by weight of acrylonitrile, and (b) from 30 to 5 percent by weight of methyl acrylate in the presence of from 1 to 20 parts by weight of (c) a copolymer containing from 60 to 80 percent by weight of polymerized butadiene and from 40 to 20 percent by weight of polymerized acrylonitrile, said collapsible dispensing tube having connected thereto headpiece means made from a copolymer resulting from the polymerization of 100 parts by weight of (a) at least 50 percent by weight of at least one nitrile having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and (b) up to 50 percent by weight based on the combined weight of (a) and (b) of an ester having the structure

$$CH_2=\underset{\displaystyle R_1}{\overset{|}{C}}-COOR_2$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms, in the presence of from 1 to 40 parts by weight of (c) a copolymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and an olefinically unsaturated nitrile having the structure

$$CH_2=\underset{\displaystyle R}{\overset{|}{C}}-CN$$

wherein R has the foregoing designation containing from 50 to 95 percent by weight of polymerized conjugated diene and from 50 to 5 percent by weight of polymerized olefinically unsaturated nitrile.

4,265,949

MULTILAYER BAG STRUCTURE FOR PACKAGING

Kazuya Kugimiya, Ohtake, Japan, assignor to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Jun. 19, 1979, Ser. No. 50,132
Claims priority, application Japan, Jun. 29, 1978, 53/78100
Int. Cl.[3] B65D *31/02;* B32B *27/08*
U.S. Cl. 428—35 9 Claims

1. A multilayer bag structure having at least two laminated layers, the innermost layer being composed of a random copolymer of ethylene and an alpha-olefin having 5 to 10 carbon atoms, said copolymer having the following characteristics:

(1) it has an ethylene content of 99.5 to 94 mole%,

(2) it has a melt index at 190° C. of 0.1 to 20,

(3) it has a density of 0.915 to 0.940 g/cm^3,

(4) it has a p-xylene-soluble content (A) at 25° C. of 0.5 to 5% by weight,

(5) it has a boiling n-heptane-insoluble content (B) of not less than 8% by weight to less than 20% by weight, and

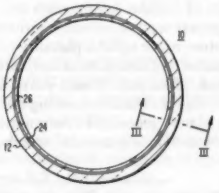
(6) the total of (A) and (B) is not more than 20% by weight.

4,265,950

PHOSPHOR-COATING COMPOSITION AND METHOD FOR ELECTRIC DISCHARGE LAMP

Eugene A. Graff, Cedar Grove, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 27, 1979, Ser. No. 97,767
Int. Cl.[3] F21K *2/00*
U.S. Cl. 428—35 14 Claims



1. In the manufacture of a fluorescent lamp having a glass envelope that is interiorly coated with a transparent film of tin oxide, the method of depositing an adherent layer of phosphor on the tin-oxide coated surface of the lamp envelope, which method comprises;

preparing an aqueous suspension of phosphor particles containing, by weight based on the amount of phosphor, from about 0.05% to 0.25% calcium nitrate, from about 0.1% to 0.6% by weight finely-divided aluminum oxide, from about 0.1% to 0.8% ammonium nitrate, and a small amount of an organic binder up to about 10%,

coating the inner surface of the lamp envelope with a layer of the aqueous phosphor-containing suspension,

allowing the coated envelope to dry sufficiently to set the phosphor-containing layer in place, and then

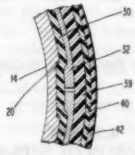
lehring the coated envelope at a temperature and for a time sufficient to melt the calcium nitrate and ammonium nitrate additives and concurrently burn out the organic binder and thereby produce an adherent layer of phosphor particles on the tin-oxide coated surface of the lamp envelope.

4,265,951

FIBER REINFORCED COMPOSITE SHAFT WITH METALLIC CONNECTOR SLEEVES MOUNTED BY LONGITUDINAL GROOVE INTERLOCK

Derek N. Yates, Los Gatos, and John C. Presta, San Jose, both of Calif., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 890,231, Mar. 27, 1978, Pat. No. 4,187,135.
This application Jul. 24, 1979, Ser. No. 60,244
Int. Cl.[3] F16C *1/00*
U.S. Cl. 428—36 6 Claims



1. A tubular fiber reinforced composite shaft comprising:

a shaft body comprising a plurality of integrally bonded circumferential plies of solidified fiber reinforced resinous material;

a metal sleeve mounted in at least one end of said shaft body, said sleeve including a plurality of circumferentially spaced recesses on an outer periphery thereof;

a plurality of arc-shaped segments embedded in said plies, said segments including spaced tongues projecting toward said recesses so as to position a portion of at least one of said plies into said recesses, thereby forming a torsion-transmitting connection therebetween, said segments extending circumferentially and exhibiting a generally cylindrical shape.

4,265,952

VERMICULAR EXPANDED GRAPHITE COMPOSITE MATERIAL

Ronald S. Caines, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 889,308, Mar. 23, 1978, Pat. No. 4,199,628.
This application Sep. 24, 1979, Ser. No. 78,538
Int. Cl.[3] F16L *9/14;* C01B *31/04;* B32B *31/20, 27/00*
U.S. Cl. 428—36 4 Claims

1. A vermicular expanded graphite composite material comprising from about 50 to about 97 percent by weight expanded vermicular graphite impregnated with from about 3 to about 50 percent by weight of a corrosion resistant resin having a particle size of from about 0.05 to about 0.5 micron, said resin being uniformly distributed in the pores formed between adjacent graphite particles.

4,265,953

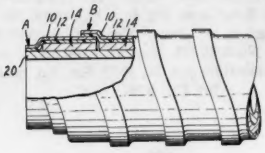
INTUMESCENT STRESSED SKIN COMPOSITE MATERIAL

James R. Close, Roberts, Wis., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 7, 1979, Ser. No. 18,437
Int. Cl.[3] B32B *15/08, 17/02;* C04B *43/02;* E04B *1/74*
U.S. Cl. 428—78 10 Claims

1. A self-securing composite insulating wrapping comprising a first web of a thin, flexible, compliant, stressable material having a tensile strength of at least 1.75 kg/cm^2, an adhesive substantially covering one face of said web and a second smaller web of resilient intumescent sheet material positioned and adhered to the adhesive covered surface of said web of flexible material with the long dimensions of the two webs parallel with the adhesive coated surface of said first web exposed along at least one edge of said second web, said wrap-

ping when applied onto a base material being capable of exfoliation by thermal or chemical means to provide a thermal insulating layer on said base material overcoated by a protective stressed outer skin.



4,265,954

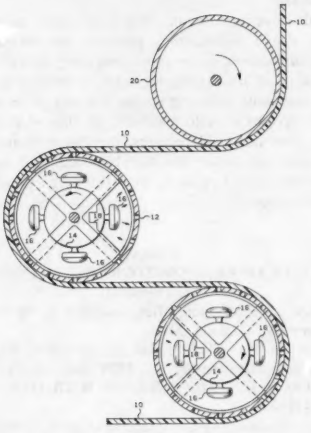
SELECTIVE-AREA FUSION OF NON-WOVEN FABRICS

Gerald A. Romanek, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 11, 1978, Ser. No. 895,338

Int. Cl.³ B32B 3/02

U.S. Cl. 428—85 **32 Claims**



1. A method for physically fusing preselected areas by the application of heat while leaving unfused adjacent, nonselected areas of an extended, flat body of nonwoven, fibrous material, containing at least some thermoplastic fibers; comprising, exposing said fibrous material to heat, from a source of radiant energy adapted to produce heat in said body of fibrous material, spaced from said body of fibrous material and radiating over an area of said body of fibrous material including both said preselected and said nonselected areas, at a temperature and for a time at least sufficient to fuse at least some of said thermoplastic fibers and concentrating the heat from said source of energy in said preselected areas by (a) modifying the heat absorptivity of said preselected areas of said body of fibrous material, (b) modifying the heat absorptivity of said nonselected areas of said body of fibrous material, (c) interposing between said body of fibrous material and said source of energy a mask having areas of increased radiant energy transmission corresponding to said preselected areas of said body of fibrous material, (d) interposing between said body of fibrous material and said source of energy a mask having areas of decreased radiant energy transmission corresponding to said nonselected areas of said body of fibrous material or (e) any combination of at least two of (a), (b), (c) and (d).

29. An extended, flat body of nonwoven, fibrous material, containing at least some thermoplastic fibers and having tufting materials combined in at least some preselected areas of said body of fibrous material, by exposing said fibrous material to heat, from a source of radiant energy adapted to produce heat in said body of fibrous material, spaced from said body of fibrous material and radiating over an area of said body of fibrous material including both said preselected areas and adjacent, nonselected areas of said body of fibrous material, at a temperature and for a time sufficient to fuse at least some of said thermoplastic fibers and concentrating the heat from said source of energy in said preselected areas of said body of fibrous material, to fuse at least some of said thermoplastic fibers in said preselected areas where said tufting materials contact said body of fibrous material.

4,265,955

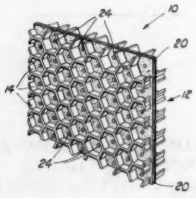
HONEYCOMB CORE WITH INTERNAL SEPTUM AND METHOD OF MAKING SAME

Marlyn F. Harp, Winfield; James L. Diepenbrock, Jr., and M. Dean Nelsen, both of Wichita, all of Kans., assignors to The Boeing Company, Seattle, Wash.

Filed May 1, 1978, Ser. No. 901,337

Int. Cl.³ B32B 3/12

U.S. Cl. 428—116 **9 Claims**



1. A sound attenuating panel for installation in the high velocity air flow region of an engine nacelle, and other applications requiring acoustic treatment, the panel comprising:

a single layer of cellular honeycomb core;

an acoustic planar septum formed internally in said core, said planar septum made up of a plurality of individual continuous co-planar septum permanently attached to the sides of each individual cell of said core, said planar septum dividing the layer of said core along the length thereof and forming a planar geometric configuration therein; and

at least one sheet of facing material attached to the surface of said core.

4,265,956

SYNTHETIC NET MATERIAL

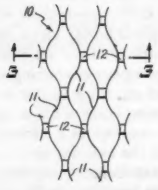
Johannes J. V. Colijn, Huttwil, Switzerland, assignor to Breveteam S.A., Fribourg, Switzerland

Filed Jul. 25, 1978, Ser. No. 927,943

Claims priority, application Switzerland, Aug. 10, 1977, 9791/77

Int. Cl.³ B32B 3/12

U.S. Cl. 428—134 **7 Claims**



1. An expandable net for protecting plant crops and formed

from a length of partially crystalline synthetic material colored by means of an optically covering pigment comprising:

a mesh structure defined by a plurality configuration joined to a plurality of intersection portions of shrunk material having a flat configuration, said webs in an unexpanded condition of the net branching off in pairs from the intersection portions in the longitudinal direction with each pair of webs being substantially parallel and forming the sides of a plurality of rhomboid shapes with the intersection portions being disposed at the intersection of said rhomboid shapes.

4,265,957

MULTI-LAYERED, FIBERGLASS-REINFORCED FLOOR COVERING SYSTEMS

Wesley A. Severance, Independence, and Julie Y. L. Shaw, Broadview Heights, both of Ohio, assignors to General Signal Corporation, Stamford, Conn.

Filed Nov. 8, 1979, Ser. No. 92,577

Int. Cl.³ B32B *5/02*

U.S. Cl. 428—143 **44 Claims**

1. A multi-layered floor construction comprising:

a floor substrate;

a cured primer coat of an epoxy resin applied over and adhering to said substrate;

a cured, fiberglass-reinforced base coat of an epoxy resin applied over and bonded to said primer coating;

a cured top coat of an epoxy resin containing filler material applied over and bonded to said fiberglass-reinforced base coat; and

a cured sealer coat of a polyurethane resin applied over and bonded to said top coat.

4,265,958

METHOD FOR THE TREATMENT OF WOOD BY A WOOD PRESERVING AGENT, AS WELL AS WOOD TREATED WITH SUCH A WOOD PRESERVATIVE AGENT

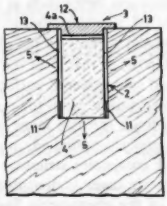
Cornelis W. Blom, Sassenheim, and Jacobus M. van Keulen, Bilthoven, both of Netherlands, assignors to Hoeka Sierpleisters En Muurverven B.V., Netherlands

Filed Mar. 24, 1978, Ser. No. 889,977

Claims priority, application Netherlands, Mar. 29, 1977, 7703412

Int. Cl.³ A01N *9/02, 17/10, 9/30;* **B32B** *21/04*

U.S. Cl. 428—166 **13 Claims**



1. A wooden object having a recess therein, said recess carrying a liquid wood preservative composition comprising a water-expelling agent and a biocide, wherein said water-expelling agent is an organic solvent of low volatility, and cover means for said recess.

4,265,959

PROCESS FOR PRODUCING SEMIPERMEABLE MEMBRANES

Takezo Sano, Takatsuki; Takatoshi Shimomura, Toyonaka; Ichiki Murase, Ibaraki, and Manabu Hirakawa, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 27, 1978, Ser. No. 973,633

Claims priority, application Japan, Dec. 28, 1977, 52/159377; Jan. 21, 1978, 53/5419

Int. Cl.³ B32B *7/02;* **B01D** *39/16*

U.S. Cl. 428—216 **15 Claims**

1. A method for the preparation of a semipermeable heterogeneous membrane having high water permeability and the ability to reject low-molecular weight materials which comprises sulfonating a porous membrane of an acrylonitrile polymer having a molecular weight of 5,000 to 5,000,000 and containing acrylonitrile in an amount of 40 to 100% by mole, wherein said porous membrane has a bubble point of more than 1 kg/cm^2 and a water permeability of 0.01 to 1000 LMH under a pressure of 10 kg/cm^2.

12. A heterogeneous semipermeable membrane having high water permeability and the ability to reject low-molecular weight materials comprising an acrylonitrile polymer membrane which has a thickness of 20 to 500μ, a surface dense layer of less than 1μ in thickness at the surface and pores increasing in size gradually towards the back surface of the membrane and is crosslinked by sulfonation more than 0.1μ in thickness from the surface, said acrylonitrile polymer containing 40 to 100% by mole of acrylonitrile and having a molecular weight of 5,000 to 5,000,000.

4,265,960

FILMS PRODUCED FROM LDPE ENCAPSULATED $CACO_3$

Harold A. Arbit, Highland Park, and Harold G. Tinger, Wayne, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,366

Int. Cl.³ B32B *27/32*

U.S. Cl. 428—220 **1 Claim**

1. Thin, biaxially oriented films of low-density polyethylene, having a thickness between 0.4 mil and about 3 mils, filled with between about 30 weight percent and about 60 weight percent calcium carbonate, wherein said films are produced from calcium carbonate having a particle size below 20 microns encapsulated in low density polyethylene.

4,265,961

BUILDING DEVICE

Gilbert A. Bena, Paris, France, assignor to Barbara S.A., Paris, France

Filed Apr. 2, 1976, Ser. No. 672,843

Claims priority, application France, Apr. 11, 1975, 75 11338

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—253 **4 Claims**

1. A method of forming a rigid shaped building element comprising the steps of providing at least one layer of a runproof knitted textile fabric having substantially uniform stretch characteristics in all directions, placing said layer of fabric on

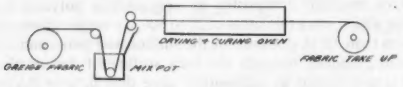
a frame to form said fabric into a desired predetermined shape and tensioned in at least one direction, maintaining said fabric on said frame under tension, applying a liquid coating capable of setting into a hard material to at least one surface of said fabric sufficient to fill the interstices of said knitwork and the loops thereof and to extend therethrough, thereafter permitting said coating to harden while maintaining said fabric under tension to thereby fix said fabric in said predetermined shape and tension and thereafter removing said tensioned hardened fabric from said form to provide a self-sustainable rigid non-deformable element.

4,265,962

LOW PENETRATION COATING FABRIC

Robert E. May, Pleasant Garden, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 20, 1976, Ser. No. 752,303
Int. Cl.³ B32B *27/34*
U.S. Cl. 428—287 **12 Claims**



8. An improved coated fabric comprising a coating substrate comprising a greige fabric impregnated with a fluorochemical composition sufficient to impart an AATCC Spray Test water repellency rating of at least 80 to said fabric, such fabric coated with an aqueous coating material, said coating material not showing-through said substrate.

4,265,963

FLAMEPROOF AND FIREPROOF PRODUCTS CONTAINING MONOETHANOLAMINE, DIETHYLAMINE OR MORPHOLINE

Ralph Matalon, Cherry Hill, N.J., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 6,728, Jan. 26, 1979, abandoned, which is a continuation of Ser. No. 871,959, Jan. 24, 1978, abandoned, which is a continuation of Ser. No. 755,596, Dec. 30, 1976, abandoned. This application Dec. 31, 1979, Ser. No. 108,591
Int. Cl.³ B27K *3/00*
U.S. Cl. 428—288 **28 Claims**

1. A flameproof and fireproof product which consists essentially of

(a) a fire-unstable material, and

(b) a coating composition which comprises a resinous reaction product of phosphoric acid and a reducing sugar, a hardener, and at least one modifying agent capable of rendering said coating composition highly and permanently intumescent at a low initiating temperature even after prolonged storage of said product, said modifying agent being selected from the group consisting of monoethanolamine, diethylamine and morpholine;

whereby when said coating composition is exposed to heat or flame, said coating composition copiously intumesces to form a thermal insulating foam barrier for said fire-unstable material, said thermal insulating foam barrier upon continued exposure to heat or flame for an appreciable time becoming a porous char or residue protecting said fire-unstable material, said char or residue being nonflammable, having adequate insulation strength and flame resistance to prevent degradation of said fire-unstable material.

4,265,964

LIGHTWEIGHT FROTHED GYPSUM STRUCTURAL UNITS

Gerald W. Burkhart, Monaca, Pa., assignor to Arco Polymers, Inc., Philadelphia, Pa.

Filed Dec. 26, 1979, Ser. No. 106,965
Int. Cl.³ B32B *13/00, 31/00*
U.S. Cl. 428—306 **14 Claims**

5. In a lightweight gypsum wallboard having a core and at least two facing skin members adhered thereto, an improved core which has been frothed and heat-cured and which comprises:

(a) a hemihydrate gypsum composition,

(b) up to about 3% by weight of said gypsum composition of expandable thermoplastic particles which have been expanded to a density below about 3 pounds per cubic foot,

(c) from about 0.1% to about 5.0% by weight of said gypsum composition of a rubbery polymeric latex,

(d) a surfactant,

(e) a latex frothing agent, and

(f) water in an amount sufficient for hydration of said gypsum composition plus a minimum excess of water sufficient permit mixing of said ingredients into a flowable mixture and disposing said mixture in a mold means to form said core.

4,265,965

POLYURETHANE FOAM ARTICLES COATED WITH A CRUSHED FOAM AND METHOD OF PRODUCING

Francis X. Chancler, Southampton, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 522,079, Nov. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 415,027, Nov. 12, 1973, abandoned. This application Jul. 7, 1976, Ser. No. 703,347
Int. Cl.³ B32B *5/18, 27/00*
U.S. Cl. 428—315 **24 Claims**

22. A method for producing a composite building material having a continuously textured surface, comprising:

a. providing (i) a foamed emulsion of an uncured and uncrosslinked elastomeric resin composition and (ii) a self-supporting resilient urethane foam substrate;

b. disposing said foamed elastomeric resin composition onto a surface of said urethane substrate to form a substantially uniform coating of predetermined thickness on the substrate, said thickness being such as to permit the irregular cell structure of the underlying urethane substrate to affect the exposed surface of the elastomeric layer in the subsequent step (d) so that after the composite structure is fully processed said textured surface is formed therein;

c. drying said elastomeric resin foam coating until said elastomeric resin foam forms a layer which is only partially cured and partially crosslinked;

d. crushing said composite structure so that said partially cured elastomeric layer is densified, the resultant partial compression of the elastomeric foam creating a continuous texture on the exposed surface thereof; and

e. further curing said textured elastomeric layer to hold said textured surface and forming said composite building material.

23. A product produced according to the method of claim **22**.

4,265,966

METHOD OF USING NITROGEN-CONTAINING POLYESTER RESINS AS EPOXY RESIN HARDENING ACCELERATORS IN WINDING BANDS FOR HIGH-VOLTAGE INSULATION OF ELECTRIC MACHINES AND APPARATUS AND MICA TAPE THEREFOR

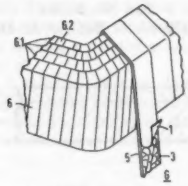
Heinz Schuh, Dinslaken, Fed. Rep. of Germany, assignor to Kraftwerk Union AG, Mülheim, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,971

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1978, 2856562

Int. Cl.[3] B32B *5/16;* B05D *5/12;* H01B *13/06;* B32B *19/00*

U.S. Cl. 428—324 24 Claims



1. Method for the manufacture of high-voltage insulation for electric machines and apparatus by wrapping a mica tape formed by adhering mica to a flexible support foil with a binder resin around the electrical equipment to be insulated and impregnating the electrical equipment having the mica tape wrapped around it with a heat-setting epoxy resin, the improvement comprising employing as said binder-resin a polyester containing a tertiary-bound nitrogen which is effective as an adhesive for the tape and also as an accelerator for the epoxy resin.

13. Mica tape for manufacturing an insulating sleeve impregnated with a hot-setting epoxy impregnating resin mixture for electric conductors, especially for the winding bars and coils of electric machines formed of mica scales applied on a flexible support and cemented to the support and to each other by means of a binder serving as the adhesive and also as the accelerator for the epoxy resin mixture when impregnated with the epoxy resin mixture, said adhesive and accelerator binder being a polyester resin containing a tertiary-bound nitrogen as part of its molecular structure.

4,265,967

WATERPROOFING SHEET MATERIAL

Charles A. Kumins, Gates Mills, and Milan L. Warford, Shaker Heights, both of Ohio, assignors to Tremco, Incorporated, Cleveland, Ohio

Division of Ser. No. 887,292, Mar. 16, 1978, which is a continuation-in-part of Ser. No. 798,566, May 19, 1977, abandoned. This application Oct. 26, 1979, Ser. No. 88,403

Int. Cl.[3] B32B *27/42, 9/04;* C08L *93/00*

U.S. Cl. 428—332 6 Claims

1. A self-supporting sheet material suitable for use as a waterproofing membrane in roofing and other structural applications, said sheet having a thickness within the range of about 20 to about 90 mils and being composed of from about 15 wt.% to about 80 wt.% of an ingredient selected from the group consisting of resin acids and resin acid derivatives, and from about 85 wt.% to about 20 wt.% of a plasticized polyvinyl butyral resin.

4,265,968

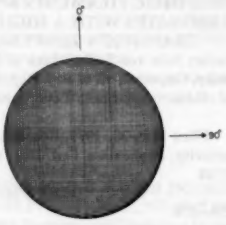
HIGH STRENGTH, HIGH THERMALLY CONDUCTIVE ARTICLES

Karl M. Prewo, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Continuation-in-part of Ser. No. 54,084, Jul. 2, 1979, abandoned. This application Mar. 28, 1980, Ser. No. 135,375

Int. Cl.[3] B32B *17/12*

U.S. Cl. 428—336 5 Claims



1. A glassware article for containing material to be heated and cooled comprising a graphite fiber reinforced low coefficient of thermal expansion glass matrix having a thermal conductivity at 25° C. of 45 BTU inch hr^{-1} ft^{-2} $°F^{-1}$, high flexural strength and modulus of elasticity.

4,265,969

METHOD FOR MANUFACTURING CAST-COATED PAPER

Nobu Yasuda; Masafumi Masuda, and Tomoichi Morita, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed May 17, 1979, Ser. No. 40,154

Claims priority, application Japan, May 19, 1978, 53-59594; May 26, 1978, 53-62989

Int. Cl.[3] B05D *3/02;* B05B *3/06;* B05D *3/12;* B32B *23/08*

U.S. Cl. 428—342 9 Claims

1. A method for manufacturing cast-coated paper, which comprises applying at least one undercoating of an aqueous coating composition containing coating pigments and a binder to at least one side of the base paper to form at least one undercoating layer, at least one of the undercoatings being applied by means of a blade coater and the application rate of the undercoating being 5 to 25 g/m^2 on dry basis per side; then applying onto the undercoating layer an overcoating of an aqueous coating composition containing coating pigments in an amount of 12 to 35 parts by weight of a plastic pigment per 100 parts by weight of the total pigments and a polymer latex having a glass transition temperature of 38° C. or higher; drying the overcoating at a temperature below the glass transition temperature of the polymer latex; and subjecting it to a mirror finishing treatment at a temperature higher than said glass transition temperature to obtain a cast-coated paper having a specular gloss greater than 15% at an angle incidency, of 20° to the normal of the paper.

9. A cast-coated paper manufactured by the method according to claim 1.

4,265,970

ACRYLIC FIBER HAVING IMPROVED DYEABILITY

Hartwig C. Bach, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 6, 1980, Ser. No. 157,127

Int. Cl.[3] D02G *3/00*

U.S. Cl. 428—364 4 Claims

1. A fiber having improved hot/wet properties, said fiber being made up of

a. at least 60 weight percent of a polymer of at least 35 weight percent of acrylonitrile copolymerized with up to

65 weight percent of at least one other mono-olefinic monomer copolymerizable with acrylonitrile, and

b. 0.5 to 40 weight percent of the polyterephthalamide of a mixture of 2,2,4 and 2,4,4 trimethyl hexamethylene diamine, said fiber being made up of a two phase heterogeneous suspension of the polyterephthalamide in a continuous phase of said polymer.

4,265,971

HYDROPHILIC FILAMENTS AND FIBRES OF POLYCARBONATES WITH A HIGH SECOND ORDER TRANSITION TEMPERATURE

Ulrich Reinehr; Bela von Falkai, both of Dormagen, and Horst Wilschinsky, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 20, 1979, Ser. No. 105,822

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1979, 2900703

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—376 **2 Claims**

1. Dry spun, hydrophilic core-jacket filaments and fibres of polycarbonates having a porosity and a water retention capacity of at least 10%, a mercury density of less than 1.0 g/cc, a strength of at least 1.5 cN/dtex and a second order transition temperature of at least 125° C.

4,265,972

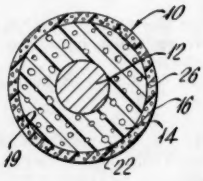
COATED FIBERS AND RELATED PROCESS

Bernard Rudner, 25 Kenwood Rd., Ridgewood, N.J. 07450

Filed Mar. 9, 1979, Ser. No. 19,164

Int. Cl.³ D02G *3/00*

U.S. Cl. 428—392 **39 Claims**



1. A composite fiber suitable for spinning, weaving or floccing comprising a core fiber and adhering thereto a sheath of a resin foam having a smooth continuous regular outer surface; and sheath comprising an inner zone adhering to said core fiber and an outer zone of increased density and smaller cell-size; the outer surface of which is gas permeable, smooth and regular.

4,265,973

METHOD FOR COATING AN OBJECT MADE OF A VULCANIZED POLYALKYLENE RUBBER

Pieter H. J. Schuurink, RG Noordwijk-Binnen, and Arie Noomen, ED Voorhout, both of Netherlands, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jun. 2, 1978, Ser. No. 911,837

Claims priority, application Netherlands, Jun. 8, 1977, 7706283

Int. Cl.³ B32B *27/40*

U.S. Cl. 428—424.8 **12 Claims**

1. A method for coating an object made of a vulcanized polyalkylene rubber with a composition containing a polyurethane characterized in that a composition which is prepared by admixing 100 parts by weight of an ethylenically unsaturated polyurethane binder with active hydrogen atoms, 0.25–30 parts by weight of a cross-linking agent for the polyurethane binder and 0.1–10 parts by weight of a radical initiating compound is applied to the object, said polyurethane binder being prepared by reaction of (a) 0.5–0.99 equivalent of a polyhydroxy compound, (b) 0.01–0.5 equivalent of an acrylic or methacrylic hydroxy ester and (c) 1.6–2.4 equivalents of an organic diisocyanate, after which the resulting reaction product is reacted with 1.1–2.8 equivalents of a polyamine or alkanolamine.

4,265,974

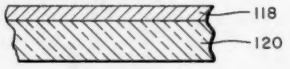
ELECTRICALLY CONDUCTIVE, INFRARED REFLECTIVE, TRANSPARENT COATINGS OF STANNIC OXIDE

Roy G. Gordon, 23 Highland St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 21,958, Mar. 19, 1979, abandoned, which is a continuation-in-part of Ser. No. 737,064, Nov. 1, 1976, Pat. No. 4,146,657. This application Apr. 9, 1979, Ser. No. 28,502

Int. Cl.³ B32B *15/04*; B05D *5/12*; H01L *29/12*

U.S. Cl. 428—432 **14 Claims**



1. An article of manufacture comprising a generally transparent inorganic substrate such as glass and a fluorine-doped stannic oxide film thereon said object having an infrared reflectivity of at least about 85% as measured with 10 micron wavelength of incident radiation, said film having a maximum resistivity of 10 ohms.

14. A semiconductor article of the type used in electronic circuitry comprising a coating of fluorine-doped stannic oxide which is characterized by a resistance of less than about 5 ohms per square and a bulk resistivity in said coating of about 10^{-4} ohm-cm.

4,265,975

POLYESTER RESIN COMPOSITION CONTAINING OXY ALUMINUM ACYLATES

Charles E. Pratt, Signal Mountain, Tenn., assignor to Chattem Inc., Chattanooga, Tenn.

Filed Aug. 9, 1979, Ser. No. 65,142

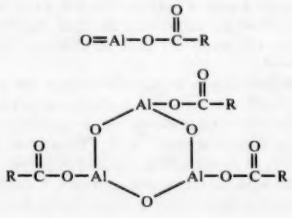
Int. Cl.³ B29D *7/02*; C08K *5/09*; C08L *67/06*

U.S. Cl. 428—480 **17 Claims**

1. An aluminum modified, curable storage stable polyester resin composition which, when cured, exhibits substantially no decrease in (a) physical properties and (b) chemical resistance as a result of aluminum being present which composition comprises on a 100 weight percent bases:

(A) from about 20 to 90 weight percent of an unsaturated polyester resin having a molecular weight ranging from about 1,000 to 30,000 and comprised of a condensate of at least one polyol with a mixture of at least one saturated polycarboxylated compound and at least one unsaturated polycarboxylated compounds,

(B) from about 0.1 to 20 weight percent of at least one oxy aluminum acylate having either one of the following formulas:



where R is in any given occurence an independently selected hydrocarbon radical selected from the group consisting of aliphatic and aromatic radicals containing from 6 through 10 carbon atoms each,

(C) from about 50 to 1000 ppm of at least one inhibitor, and

(D) from about 10 to 80 weight percent of a liquid comprising at least one vinyl monomer having a molecular weight ranging from about 100 to 250 and said polyester resin, said oxy aluminum acylate, said inhibitor and said vinyl monomer being dissolved together.

3. A composition of claim **1** to which a latent curing system has been added while said composition is in a liquid state, but wherein the total amount of oxy aluminum acylate dissolved therein is such that said composition is in the physical state of an uncured formable solid.

6. The composition of claim **3** wherein said composition is in the physical form of a sheet suitable for use as a sheet molding compound in a matched metal die molding process.

12. A process for making a molded article of manufacture comprising the steps of

(A) comforming a sheet product of claim **6** between the surface defining the cavity of a matched metal die, and

(B) heating the resulting so conformed sheet for a time and at a temperature sufficient to cure said sheet as so formed.

4,265,976

RADIATION-CURABLE COATED ARTICLE HAVING MOISTURE BARRIER PROPETES

Michael T. Nowak, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 944,034, Sep. 19, 1978, Pat. No. 4,201,642. This application Sep. 17, 1979, Ser. No. 76,020

Int. Cl.[3] **B32B** *9/04*

U.S. Cl. 428—486 **5 Claims**

1. An article comprising a substrate in combination with an adherent moisture barrier protective film, which combination is produced by coating the substrate surface with a resin composition, and then radiation-curing the said coating to form the moisture barrier protective film on the substrate surface; wherein the resin composition comprises a blend of (1) between about 10 and 30 weight percent of chlorinated rubber; (2) between about 2 and 25 weight percent of chlorinated paraffin; (3) between about 15 and 45 weight percent of vinyl alkanoate; (4) between about 10 and 40 weight percent of crosslinking monomer containing at least two polymerizable olefinically unsaturated groups; (5) between about 0.5 and 15 weight percent of photoinitiator; and (6) between about 0.5 and 5 weight percent of stabilizer, based on the total composition weight.

4,265,977

PAPER COATING COMPOSITION OF UNSATURATED ACID AND MONO-OLEFIN POLYMERIZED IN THE PRESENCE OF A PREFORMED STYRENE/BUTADIENE LATEX

Takayuki Kawamura, Kawasaki; Kichiya Tazaki; Takashi Sakakiyama, both of Yokohama, and Toshio Hasegawa, Tokyo, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Apr. 16, 1979, Ser. No. 30,392

Int. Cl.[3] **C08K** *3/00;* **C08L** *23/26, 25/10, 33/02*

U.S. Cl. 428—511 **11 Claims**

1. An aqueous paper coating composition comprising and an alkali-sensitive latex wherein said alkali-sensitive latex is a synthetic copolymer latex prepared by emulsion copolymerizing (A) from about 10 to about 90 parts by weight of a monomer mixture comprising, based upon the weight of such monomer mixture, (1) from about 10 to about 60 weight percent of an ethylenically unsaturated carboxylic acid monomer and (2) from about 40 to about 90 weight percent of a copolymerizable monoolefin compound in the presence of (B) from about 10 to about 90 parts by weight, on a polymer solids basis, of a preformed copolymer latex comprising, in polymerized form, (1) a monovinylidene aromatic monomer and (2) an open-chain aliphatic conjugated diene; with the proviso that, if said preformed copolymer latex constitutes about 60 weight percent or more of the said alkali-sensitive copolymer latex on a polymer solids basis, then said preformed copolymer latex either has been copolymerized to a conversion of monomer to polymer therein of at least about 90 weight percent or has been treated for removal of residual monomer therefrom such that a maximum of about 10 weight percent residual monomer resides in said preformed copolymer latex based upon the weight of the polymer solids thereof.

10. The aqueous paper coating composition of claim **1** additionally comprising at least one pigment.

11. A coated paper product comrising a paper sheet carrying a dried deposit of aqueous coating composition of claims **1** or **10**.

4,265,978

HEAT-SENSITIVE RECORDING PAPER IMPROVED IN KEEPING QUALITY OF GROUND COLOR

Sadao Morishita; Fumio Okumura, and Masahiro Higuchi, all of Tokyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 13, 1979, Ser. No. 75,685

Claims priority, application Japan, Sep. 20, 1978, 53/115322

Int. Cl.[3] **B41M** *5/18*

U.S. Cl. 428—537 **12 Claims**

1. A heat-sensitive recording paper which comprises a support and at least one dye precursor selected from the group consisting of 3-pyrrolidino-6-methyl-7-anilinofluoran and 3-N-methylcyclohexylamino-6-methyl-7-anilinofluoran and 2,2-bis(4'-hydroxyphenyl)propane as a color-developing agent on said support, characterized in that said support is a paper which has been sized so as to become neutral or alkaline during wet paper making, said sizing having been carried out by (1) the use of an anionic sizing agent and by means of fixation with a cationic fixing agent, (2) the use of a reactive sizing agent and a fixing agent therefor or (3) the use of a self-fixable cationic sizing agent.

4,265,979

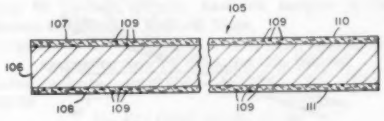
METHOD FOR THE PRODUCTION OF GLASS FIBER-REINFORCED GYPSUM SHEETS AND GYPSUM BOARD FORMED THEREFROM

Donald O. Baehr. Arlington Heights, and David G. Izard, Hoffman Estates, both of Ill., assignors to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 912,776, Jun. 5, 1978. This application Nov. 7, 1979, Ser. No. 92,153

Int. Cl.[3] **B32B** *3/00, 9/04;* **C04B** *43/02*

U.S. Cl. 428—171 **16 Claims**



1. A cementitious laminated construction board having reinforcing fibers dispersed in the outer sheets thereof, said structural board being the product formed by the method which comprises:

(A) forming a pair of cementitious sheets having reinforced fibers dispersed therein, each of said sheets being formed by:

(a) mixing together in a moving air current generated by an air blower a substantially dry water-settable calcium sulfate hemihydrate in finely particulate form with reinforcing glass fibers,

(b) providing a foraminous moving surface,

(c) depositing the mixture of calcium sulfate hemihydrate and glass fibers on said foraminous surface to form a sheet

(d) applying water over said sheet,

(B) depositing an aqueous slurry of a water-settable calcium sulfate hemihydrate over one of said fiber-containing cementitious sheets,

(C) placing the other of said fiber-containing cementitious sheets over the aqueous slurry,

(D) permitting said cementitious sheets and said slurry to set, and

(E) drying any excess water remaining in said construction board.

4,265,980

TECHNIQUE FOR THE GROWTH OF MAGNETIC GARNET COMPOSITIONS

William A. Bonner, Warren Township, Somerset County, and LeGrand G. Van Uitert, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 30, 1977, Ser. No. 866,024

Int. Cl.[3] C30B *19/04*

U.S. Cl. 428—697 **13 Claims**

1. Method for the epitaxial growth of a first composition of the garnet structure upon a surface of a second composition of the garnet structure by crystallization from a growth solution comprising a nutrient and a flux, the first and second compositions having lattice parameters, a_o, differing by a maximum of about 0.5 percent, which comprises the steps of

(a) immersing a substrate of said second composition of the garnet structure in said growth solution containing lithium molybdate, Li_2MoO_4, and a molybdate of the formula $R_2(MoO_4)_3$ wherein R represents yttrium, a rare earth element ranging in atomic number from 62 to 71 or mixtures thereof, and

(b) removing the substrate from the melt and permitting it to cool to room temperature.

4,265,981

IMPACT-RESISTING COMPOSITES

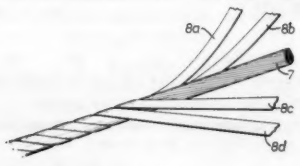
Malcolm D. Campbell, Ashwood, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australian Capital Territory, Australia

Continuation of Ser. No. 906,302, May 15, 1978, abandoned. This application Oct. 3, 1979, Ser. No. 81,424

Claims priority, application Australia, May 17, 1977, PD0123

Int. Cl.[3] B32B *5/12*; D03D *13/00*; D02G *3/00*; B65H *81/00*

U.S. Cl. 428—591 **13 Claims**



1. A composite comprising a substantially continuous matrix material selected from the group comprising thermosetting polymers, thermoplastic polymers, plaster, cement, mortar, concrete and metals; in which is embedded a plurality of reinforcing elements of higher tensile strength than the matrix, which reinforcing elements are selected from the group comprising metallic filaments, ceramic filaments, polymeric filaments, boron filaments, vegetable fibers and twisted paper; each reinforcing element being separated from the matrix by a continuous helical wrapping means of flexible material which is bonded to the matrix and which is selected from the group comprising paper, metallic wire, metallic foil, polymeric film, polymeric filaments and ceramic fibers; the strength of the wrapping means being such that the wrapping means fails at a lower tensile load than the reinforcing element, and the construction and arrangement of said wrapping means being such when the composite is subjected to a tensile load along the axis of the reinforcing element, the wrapping means contracts onto the reinforcing element to thereby increase the interaction between the wrapping means and the reinforcing element until the point at which the wrapping means fractures, thereby permitting the reinforcing element to slip within the wrapping means.

11. A method for making a reinforced composite comprising the steps of helically wrapping each one of a plurality of reinforcing elements with a flexible material, coating the thus wrapped elements with a hardenable matrix of lower tensile strength than the reinforcing elements, bringing together an assemblage of the coated elements, and setting the matrix.

4,265,982

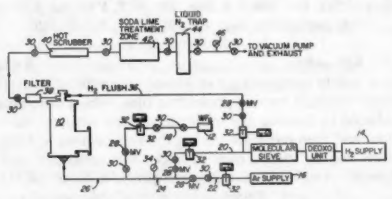
COATED WOVEN MATERIALS AND METHOD OF PREPARATION

William J. McCreary, and David W. Carroll, both of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 11, 1979, Ser. No. 47,445

Int. Cl.[3] B05D *1/22*; B32B *7/08*

U.S. Cl. 428—608 **22 Claims**



1. A method of coating a woven material with a coating material, said method comprising the following steps in the following order:

(a) introducing a first gas into a chamber containing a bed of carrier particles, said first gas being introduced at a rate sufficient to produce and maintain during the following steps a fluidized bed;

(b) introducing pieces of said woven material into said fluidized bed, said pieces being sufficiently small relative to the size of said chamber and having a density relative to the density of said fluidized bed so that said pieces move substantially randomly in said fluidized bed;

(c) heating said chamber and allowing the average temperature of said fluidized bed and of said woven material to reach a chosen deposition temperature, said chosen deposition temperature being a temperature which is at least as high as the temperature required for said coating material to be formed in a particular chemical vapor deposition reaction from at least one reactant gas, and said chosen deposition temperature being a temperature low enough so that said woven material retains its porosity;

(d) introducing said at least one reactant gas into said fluidized bed, said at least one reactant gas being such that it reacts to deposit said coating material onto said woven material at said chosen deposition temperature; and

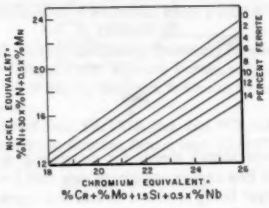
(e) allowing said at least one reactant gas to react within said fluidized bed to deposit said coating material onto said woven material,

said woven material having a melting point which is higher than said chosen deposition temperature.

4,265,983
DELTA FERRITE-CONTAINING AUSTENITIC STAINLESS STEEL RESISTANT TO THE FORMATION OF UNDESIRABLE PHASES UPON AGING

James M. Leitnaker, Kingston, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 26, 1979, Ser. No. 52,180
Int. Cl.[3] B32B *15/18*
U.S. Cl. 428—683 4 Claims

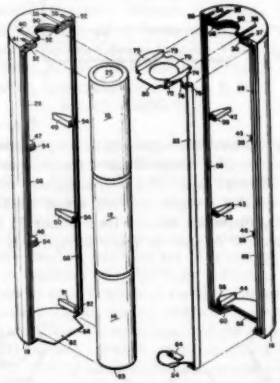


1. A composite structure comprising at least two structural portions of austenitic stainless steel joined together by a weldment of austenitic stainless steel containing a ferrite phase, said weldment consisting essentially of by weight 8.5 to 9.5% Ni, 14.0 to 16.4% Cr, up to 1.2% Mo, an effective concentration of carbon plus nitrogen, and the balance predominantly Fe, said effective concentration of carbon plus nitrogen being sufficient to inhibit the transformation of ferrite phase to sigma phase upon prolonged exposure of the structure to elevated temperatures.

4,265,984
BATTERY HOUSING

Gordon E. Kaye, Garrison, N.Y., assignor to Duracell International Inc., Bethel, Conn.

Filed Feb. 11, 1980, Ser. No. 120,417
Int. Cl.[3] H01M *2/02*
U.S. Cl. 429—178 12 Claims

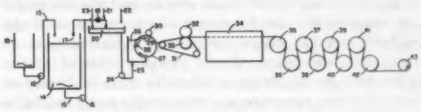


1. A battery housing for at least one cell comprising at least two electrically nonconductive housing sections joined together; first and second means for electrical terminating the housing operatively associated with said housing, said first means comprises a terminal member and conductive element, which conductive element is substantially the same length as the housing; and a conduit integrally formed from the two housing sections for electrically insulating the conductive element.

4,265,985
LEAD ACID BATTERY WITH SEPARATOR HAVING LONG FIBERS

Dennis D. O'Rell, Boxboro; Nigel I. Palmer, Lexington, both of Mass., and Vu H. Nguyen, Hightstown, N.J., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 935,280, Aug. 21, 1978, Pat. No. 4,216,281.
This application May 23, 1980, Ser. No. 152,923
Int. Cl.[3] H01M *4/56*
U.S. Cl. 429—225 5 Claims



1. A lead acid battery with a positive plate, a negative plate, a battery separator therebetween, and an electrolyte said battery separator comprised of about 30 to about 70 weight percent of a fiberous polyolefin synthetic pulp, about 15 to about 65 weight percent of a particulate siliceous filler having a particle size of about 0.01 to about 20 microns and about 1 to about 35 weight percent of long fiber having a length of at least about 0.25 inches and chosen from the group consisting of polyester paper making staple fibers having a denier of about 1.5 to about 12, acrylic paper making staple fibers having a denier of about 1.5 to about 12 and glass fibers having a diameter of about 1 to about 7 microns and mixtures thereof.

4,265,986
PHOTOPOLYMERIZABLE COMPOSITION CONTAINING CHLOROSULFONATED POLYETHYLENE

Deborah L. Allen, Waterbury; Milton Farber, Bethany, and John D. Skewis, Roxbury, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Nov. 21, 1979, Ser. No. 96,608
Int. Cl.[3] G03C *1/68*
U.S. Cl. 430—18 39 Claims

1. An elastomeric article suitable for printing comprising (A) chlorosulfonated polyethylene (B) between about 5 and 50 phr of a photopolymerized cross-linking agent derived from a photopolymerizable ethylenically unsaturated compound and (C) between about 0.1 and 5 phr of a photoinitiator activatable by actinic radiation.

4,265,987
LITHOGRAPHIC PRINTING PLATE AND METHOD FOR THE PREPARATION OF SAME

Terence M. Lawson, Aldgate, Australia, assignor to Coulter Systems Corporation, Bedford, Mass.

Continuation of Ser. No. 656,162, Feb. 9, 1976, abandoned. This application Sep. 11, 1978, Ser. No. 940,907
Claims priority, application Australia, Jan. 20, 1976, 10425/76
Int. Cl.[3] G03G *13/26, 13/28*
U.S. Cl. 430—49 36 Claims

1. The method of preparing a lithographic printing plate containing ink receptive printing image areas and water receptive non-printing background areas wherein said plate consists of a substrate having on one side thereof in sequence an electrically conductive layer and a layer of photoconductive material selected from the group consisting of primarily cadmium sulfide, zinc sulfide and a mixture of zinc sulfide and cadmium sulfide, the photoconductive layer being fully crystalline, with the crystals all closely packed highly oriented, said photoconductive layer being deposited by r.f. sputtering under a negative bias and having a light transmissivity of at least 70 percent, which material is reactive with chromic ion in an aqueous acid

solution to form hydrophilic chromates, which method comprises the steps of

forming an electrostatic latent image on the surface of said photoconductive layer by firstly applying uniform electrostatic charges thereto and then exposing to a radiation pattern,

developing said electrostatic latent image by attraction thereto of electroscopic marking particles to define said ink receptive printing image areas on said surface, and

applying to said surface an aqueous chromic acid solution containing chromate ions and hydrogen ions in such concentration so that the chromate ions exceed the concentration required for the formation of chromates with the available metallic ion of the phtotoconductive layer to assure full conversion of said exposed material to the hydrophilic metal chromate whereby there is formed at least one water receptive yet substantially water insoluble chromium containing compound by reaction with at least part of said fully crystalline inorganic photoconductive substance contained in said photoconductive layer in areas free of said electroscopic marking particles to thereby form said water receptive non-printing background areas on said surface without conversion of that portion of said photoconductive surface below said electroscopic marking particles to the hydrophilic chromate.

4,265,988

SELF-STICKING ADHESIVE TAPE

Cornelis P. H. Kessels, Venlo, Netherlands, assignor to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Feb. 21, 1979, Ser. No. 13,089

Claims priority, application Netherlands, Feb. 24, 1978, 7802073

Int. Cl.[3] **G03G** *5/00;* **B32B** *5/16*

U.S. Cl. 430—56 **10 Claims**

1. A self-sticking adhesive tape, particularly suitable for joining ends of a belt at a side thereof presenting a photoconductive layer of zinc oxide in a binder, said tape consisting essentially of a polyester support film provided at one side thereof with a flexible layer consisting essentially of conductive particles in a polymeric binder and suffiently electrically conductive to prevent said layer from holding electrostatic charges, and at the other side with an adhesive layer having (a) an adhesive force of at least 200 Newton/meter and (b) a shear tolerance of not more than 1 mm, property (a) being determined at 80° C. after a strip of the tape having its adhesive layer adhered to such photoconductive layer has been preserved for 10 days, and property (b) being determined, after such strip has been so preserved, at a continued shear load of 2 Newton/cm^2 in an atmosphere at 45° C. and 30% relative humidity.

10. A photoconductive belt for an electrophotographic copying machine, comprising a flexible photoconductive belt having on its imaging side a photoconductive layer of zinc oxide dispersed in a binder and having ends of the belt joined together by a tape applied onto said layer, said tape being a self-sticking adhesive tape according to claims **1**, **2**, **3**, **4**, **5**, **6**, **7**, **8**, or **9**.

4,265,989

PHOTOSENSITIVE MEMBER FOR ELECTROPHOTOGRAPHY

Kazuyoshi Tateishi; Yasushi Hoshino, both of Yokosuka, and Rikuo Takano, Zushi, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed May 9, 1979, Ser. No. 37,508

Claims priority, application Japan, May 22, 1978, 53/60017

Int. Cl.[3] **G03G** *5/04*

U.S. Cl. 430—57 **2 Claims**

1. A photosensitive member for electrophotography comprising

(a) a first photoconductive layer which is uniformly charged and on which is focused a light image so as to form an electrostatic latent image,

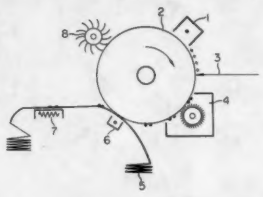
(b) a light amplification layer comprising

a first transparent electrode,

a field-effect light emitting layer,

a second photoconductive layer and

a second electrode laminated in the order named, and



(c) DC power supply means for impressing a voltage between said first and second electrodes, said first photoconductive layer being attached to said first transparent electrode of said light amplification layer,

whereby when a light image impinges upon said first photoconductive layer, the portion of said field-effect light emitting layer corresponding to said light image emits the light to said first photoconductive layer.

4,265,990

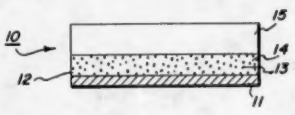
IMAGING SYSTEM WITH A DIAMINE CHARGE TRANSPORT MATERIAL IN A POLYCARBONATE RESIN

Milan Stolka; Damodar M. Pai, both of Fairport, and John F. Yanus, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

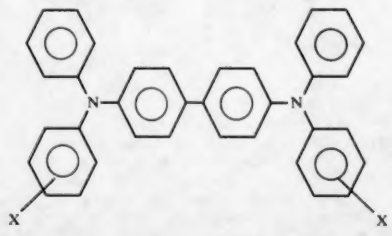
Continuation-in-part of Ser. No. 793,819, May 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 716,403, Aug. 23, 1976, abandoned. This application Dec. 4, 1978, Ser. No. 965,969

Int. Cl.[3] **G03G** *5/00, 5/04*

U.S. Cl. 430—59 **6 Claims**



1. An imaging member comprising a charge generation layer comprising a layer of photoconductive material and a contiguous charge transport layer of a polycarbonate resin material having a molecular weight of from about 20,000 to about 120,000 having dispersed therein from about 25 to about 75 percent by weight of one or more compounds having the general formula:



wherein X is selected from the group consisting of an alkyl

group, having from 1 to about 4 carbon atoms and chlorine, said photoconductive layer exhibiting the capability of photogeneration of holes and injection of said holes and said charge transport layer being substantially nonabsorbing in the spectral region at which the photoconductive layer generates and injects photogenerated holes but being capable of supporting the injection of photogenerated holes from said photoconductive layer and transporting said holes through said charge transport layer.

4,265,991

ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER AND PROCESS FOR PRODUCTION THEREOF

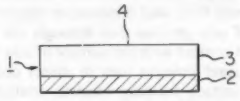
Yutaka Hirai, Tokyo; Toshiyuki Komatsu, Kawasaki; Katsumi Nakagawa, Tokyo; Teruo Misumi, Toride, and Tadaji Fukuda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 971,114

Claims priority, application Japan, Dec. 22, 1977, 52/154629; Jan. 23, 1978, 53/5958

Int. Cl.³ G03G *5/082*

U.S. Cl. 430—64 **20 Claims**



1. An electrophotographic photosensitive member comprising a substrate for electrophotography and a photoconductive layer, said photoconductive layer being formed of amorphous silicon by utilizing electric discharge, containing 10–40 atomic percent of hydrogen and being 5–80 microns in thickness, and said photoconductive layer having a high dark resistance and a high SN ratio for electrophotographic processing.

4,265,992

COATED MAGNETIC DEVELOPER PARTICLES FOR ELECTROPHOTOGRAPHY CONTAINING VINYL AND OLEFIN RESINS

Toshihiro Kouchi, Hirakata; Hiroshi Takayama, and Tatsuo Aizawa, both of Osaka, all of Japan, assignors to Mita Industrial Company Limited, Osaka, Japan

Filed Jul. 31, 1978, Ser. No. 929,411

Claims priority, application Japan, Aug. 5, 1977, 52/93361

Int. Cl.³ G03G *9/14*

U.S. Cl. 430—107 **14 Claims**

1. A developer for electrophotography consisting essentially of a dry blend of fixing magneto-sensitive particles having a particle size of 5 to 50μ and flowability and electric resistance-controlling fine particles having particle size of up to 1 micron in an amount of 0.001 to 2 parts by weight per 100 parts by weight of said fixing magneto-sensitive particles, wherein said fixing magneto-sensitive particles are obtained by kneading a composition comprising (A) Fe_3O_4 or γ-Fe_2O_3, (B) carbon black, (C) a binder resin composed mainly of at least one resin selected from the group consisting of aromatic vinyl resins and acrylic resins and (D) a low-molecular-weight olefin resin at an (A):(B):(C):(D) mixing weight ratio of (20–80):(0.5–20):(-18–40):(0.5–30), cooling the kneaded composition and pulverizing the cooled composition and said flowability-and electric resistance-controlling fine particles are adhering to and held on the surfaces of said fixing magneto-sensitive particles substantially inseparably therefrom wherein said binder resin (C) is present in the fixing magneto-sensitive particles in the form of a continuous phase and said low-molecular-weight olefin resin (D) is present in the fixing magneto-sensitive particles in the form of a dispersed phase together with Fe_3O_4 or γ-Fe_2O_3 (A) and carbon black (B).

5. A developer for electrophotography consisting essentially of a dry blend of fixing magneto-sensitive particles having a particle size of 5 to 50μ and fine carbon black particles having a particle size of up to 1μ in an amount of 0.001 to 2 parts by weight per 100 parts by weight of said fixing magneto-sensitive particles, wherein said fixing magneto-sensitive particles are obtained by kneading a composition comprising (A) Fe_3O_4 or γ-Fe_2O_3, (B) carbon black, (C) a binder resin composed mainly of at least one resin selected from the group consisting of aromatic vinyl resins and acrylic resins and (D) an olefin resin having a weight average molecular weight of 1,000 to 10,000 and a softening point of 80° to 160° C. at an (A):(B):(C):(D) mixing weight ratio of (20–80):(0.5–20):(18–40):(0.5–30), cooling the kneaded composition and pulverizing the cooled composition and said fine particles are adhering to and held on the surfaces of said fixing magneto-sensitive particles substantially inseparably therefrom wherein said binder resin (C) is present in the fixing magneto-sensitive particles in the form of a continuous phase and said low-molecular-weight olefin resin (D) is present in the fixing magneto-sensitive particles in the form of a dispersed phase together with Fe_3O_4 or γ-Fe_2O_3 (A) and carbon black (B).

4,265,993

MAGNETIC TONER FOR ELECTROSTATIC IMAGES AND TRANSFER COPYING

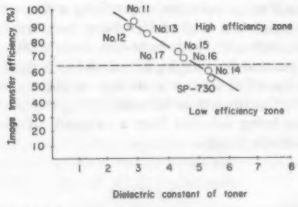
Tsuneaki Kawanishi; Akio Mukoh, and Hirosada Morishita, all of Hitachi, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Jun. 26, 1979, Ser. No. 52,442

Claims priority, application Japan, Jun. 28, 1978, 53-77445

Int. Cl.³ G03G *9/14*

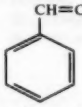
U.S. Cl. 430—107 **5 Claims**



1. A magnetic toner composition for the development of electrostatic latent images and for electrostatic transfer-copying comprising a magnetic powder and a resin, wherein said resinous component contains at least one monomer from each of monomer groups (1) to (3), wherein group (1) includes

$CH_2=CH$ (COOH) and $CH_2=C(CH_3)$ (COOH);

group (2) includes



and group (3) includes

$CH_2=CH$ ($COOR_1$) and $CH_2=C(CH_3)$ ($COOR_2$),

wherein R_1 is an alkyl radical containing from 1 to 12 carbon atoms, and R_2 is an alkyl radical containing from 2 to 12 carbon atoms, and further wherein said composition has a particulate diameter ranging between 3 and 30 μm, an electric resistivity

ranging from between 10^9 and 10^6 ohm-cm at 4000 volts/cm DC and a dielectric constant ranging between 2.6 and 5.

2. The magnetic toner of claim 1 wherein said resinous component contains 5 to 20% by mol of the monomer of group (1), 20 to 60% by mol of the monomer of group (2), and 20 to 75% by mol of said monomer of group (3).

4,265,994

PRESSURE FIXABLE CAPSULE TONER

Tetsuo Hasegawa, Tokyo; Shigeo Kato, Noda, and Takeshi Miyashita, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1979, Ser. No. 58,671

Claims priority, application Japan, Jul. 18, 1978, 53/87328; Jul. 28, 1978, 53/92102; Jul. 28, 1978, 53/92103

Int. Cl.³ G03G *9/00*

U.S. Cl. 430—107 **12 Claims**

1. A pressure fixable capsule toner which comprises a core material containing a pressure fixable component and an outer shell layer of 0.1–8 microns containing at least 40% by weight of a cyclized rubber having a molecular weight from 5,000–20,000.

4,265,995

CARRIER CORE SURFACE TREATMENT

Joseph Mammino, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 22, 1979, Ser. No. 87,119

Int. Cl.³ G03G *9/00*

U.S. Cl. 430—107 **10 Claims**

1. An electrostatographic developer mixture comprising finely-divided, positively triboelectrically charging toner particles electrostatically clinging to the surface of negatively triboelectrically charging carrier particles having an average diameter of from between about 30 microns and about 1,000 microns, said toner particles comprising a thermoplastic resin and a colorant, and said carrier particles comprising a core particle treated with from between about 0.001 percent and about 1.0 percent by weight, based on the weight of said carrier particles, of at least one surface active additive selected from highly fluorinated surfactants having an ionic group, said ionic group being selected from a cationic, anionic, nonionic, and amphoteric group.

4,265,996

METHOD OF IMPROVING THE ELECTRICAL CONTACT BETWEEN THE INSULATING IMAGE CARRIER AND CONDUCTIVE SUPPORT IN ELECTROGRAPHIC RECORDING PROCESSES

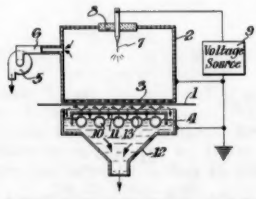
Walter Simm, Leverkusen, and Friedrich Bestenreiner, Gruenwald, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed May 31, 1977, Ser. No. 801,460

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1976, 2625395

Int. Cl.³ G03G *13/10*

U.S. Cl. 430—119 **5 Claims**



1. In a continuously operating electrographic recording and development process for producing in a development zone an electrostatic charge image on an image carrier consisting essentially of a highly insulating film and particles thereon the steps comprising

imposing a latent electrostatic charge image on one surface of a continuous strip of a highly insulating film

subsequently introducing said charged insulating film into an image developing step during which developing step said insulating film separates a first zone where developer fluid is in contact with the charged image side of the film from gaseous ions and a gas permeable electrically conductive grid positioned in a second zone on the opposite side of the film, in said first zone flowing a fluid developer comprised of a non-conductive fluid and charged pigment particles across said surface having the latent electrostatic charge image, and

developing a visible image on said surface by means of the particles

during a dwelling time of said film in said development step in said first zone in the range of 1 to 2 seconds

electrically contacting the opposite side of the film from the imaged surface against the gas permeable electrically conductive metal grid during the dwelling time and while flowing of the developer in contact with the imaged surface,

producing said gaseous ions by corona discharge adjacent to but removed from said conductive support and passing a portion of said gaseous ions through the metal grid and into direct contact with the surface of said opposite side of said film, said gaseous ions in direct contact with said opposite surface forming electric contact, said contact being dry and in the absence of a liquid,

the polarity of said ions being opposite to the sign of said charged pigment particles,

producing constant potential on said opposite side of the film by means of the metal grid and the gaseous ions,

whereby the visible image on the film imaged surface is defined.

4,265,997

AUTOMATIC TONER CONTROL

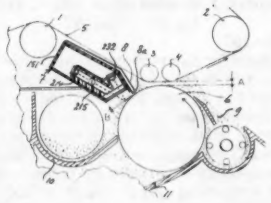
Piet M. J. Extra, Tegelen; Taco H. J. van den Honert, Venlo, and Jacobus J. van Lieshout, Grubbenvorst, all of Netherlands, assignors to Oce-Nederland B.V., Venlo, Netherlands

Filed Aug. 9, 1979, Ser. No. 65,323

Claims priority, application Netherlands, Aug. 14, 1978, 7808419

Int. Cl.³ G03G *15/08*

U.S. Cl. 430—122 **12 Claims**



1. In a process for developing electrostatic images on a moving support, in which a magnetically formed brush of a two-component developer powder on a moving surface is transported by said surface through a developing zone between said surface and said support, said powder being a mixture of toner particles and carrier particles, and the concentration of toner particles in the brush is measured for controlling the toner content of the mixture by optically sensing the reflectance of the brush to a light beam at a location just beyond the developing zone, the improvement which comprises shaping said brush to a substantially constant layer thickness on said surface as the brush is being transported from the developing zone toward said location so that periodic optical sensings of

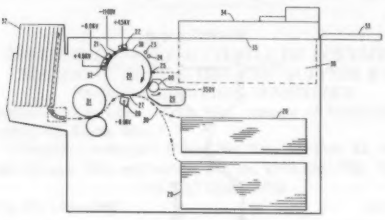
said reflectance will be effected at a substantially constant distance from the brush.

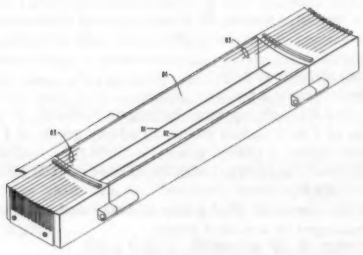
4,265,998

ELECTROPHOTOGRAPHIC PHOTORECEPTIVE BACKGROUND AREAS CLEANED BY BACKCHARGE PROCESS

John A. Barkley, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 13, 1979, Ser. No. 93,551
Int. Cl.³ G03G *13/22*
U.S. Cl. 430—125 **44 Claims**





1. In a one-cycle electrophotographic process of the transfer type, a method of cleaning residual toner particles from background areas of an image on a photoreceptive surface during production of multiple copies of the same subject while simultaneously developing the character areas of the image of said subject comprising the steps of:

charging said surface to a first level;

reducing said charge to a second level; and

applying developer material to said photoreceptive surface to develop the character areas of said image while removing residual toner from the background areas of said image.

14. A method of cleaning residual toner particles from the photoreceptive surface of a one-cycle electrophotographic copier machine of the transfer type without using a cleaning station separate from the developing station comprising the steps of:

transferring toner particles having a natural first triboelectric polarity from a developed image on said photoreceptive surface to image receiving material, said transferring of toner leaving residual untransferred toner particles on said surface;

subsequently bombarding said surface with ions of a second polarity;

then bombarding said surface with ions of the first polarity to reduce the charge on said surface to a desired level and to insure that the particles of untransferred toner have their natural triboelectric polarity; and

applying developer material at a developing/cleaning station to said photoreceptive surface to act upon at least a portion of said residual particles and remove them from said surface.

26. An electrophotographic copy process wherein a subject to be copied is imaged onto a photoreceptive surface, the copy process cycle comprising the steps of:

(1) charging the photoreceptive surface to a level higher than desired by bombarding the surface with ions of a first polarity;

(2) reducing the charge level on the photoreceptive surface to a desired level by bombarding the photoreceptive material with ions of a second polarity;

(3) exposing the photoreceptive material to a light image of said subject;

(4) developing said subject while simultaneously cleaning said photoreceptive surface of developing material remaining on said photoreceptive surface from a previous copy process cycle;

(5) transferring the developed image to a sheet of receiving material to produce a copy; and

(6) repeating steps **1–5** of said cycle to produce a subsequent copy without utilizing a separate cleaning cycle.

4,265,999

PROCESS FOR THE PREPARATION OF PLANOGRAPHIC PRINTING FORMS

Loni Schell, Hofheim-Wallau, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,559
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855393
Int. Cl.³ G03C *1/58*
U.S. Cl. 430—189 **5 Claims**

1. In the process for the preparation of planographic printing forms, in which a light-sensitive material composed of a support having a hydrophilic surface and of a light-sensitive layer, which contains a 1,2-naphthoquinone-diazide, is exposed imagewise, developed and then heated to a temperature above 180° C. for such a time and at such a temperature level that decomposition of the ink-carrying image parts takes place and an olephilic precipitate is formed on the hydrophilic image background, and the precipitate is then removed by treatment with an aqueous solution,

the improvement which comprises using an aqueous solution of about 0.01 to 50% by weight of polyvinyl phosphonic acid for the removal of the precipitate.

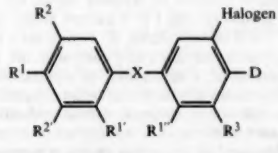
4,266,000

PHOTOSENSITIVE COPYING COMPOSITION

Paul Stahlhofen, Wiesbaden, and Fritz Erdmann, Mainz, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,193
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1977, 2742631
Int. Cl.³ C07C *113/02*; G03C *1/52*
U.S. Cl. 430—192 **9 Claims**

1. A photosensitive copying composition comprising a solvent and a naphthoquinone-(1,2)-diazide-sulfonic acid ester as the photosensitive compound, said naphthoquinone diazide sulfonic acid ester having the general formula I

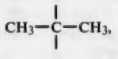


(I)

wherein:

X is a single bond or one of the groups

—CO—, —CH_2—, —S—, —SO_2—, or



R^1, $R^{1'}$, and $R^{1''}$ are the same or different and are H or D, R^2 and $R^{2'}$ are the same or different and are H or halogen, R^3 is halogen or D, and

D is a naphthoquinone-(1,2)-diazide-sulfonyloxy group.

4,266,001

LIGHT-SENSITIVE MIXTURE

Gerhard Buhr, Königstein, and Hans Ruckert, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

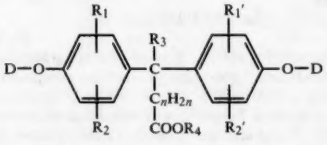
Filed Jun. 25, 1979, Ser. No. 51,908

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2828037

Int. Cl.³ G03C *1/54*; C07C *113/00*

U.S. Cl. 430—192 **18 Claims**

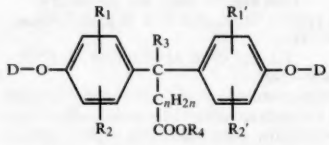
1. A light-sensitive mixture, containing a resinous binder, which is insoluble in water and soluble or swellable in aqueous-alkaline solutions, and a light-sensitive bis-1,2-naphthoquinone-2-diazide-sulfonic acid ester of a 4,4'-dihydroxy-diphenylmethane derivative corresponding to the formula I



(I)

in which R_1, R_1', R_2 and R_2' are identical or different and represent hydrogen, chlorine or bromine atoms, alkyl, alkoxy or alkoxyalkyl groups having 1 to 6 carbon atoms or alkenyl groups having 2 to 6 carbon atoms, R_3 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R_4 represents a hydrogen atom, a substituted or unsubstituted alkyl group, the carbon chain of which can be interrupted by ether oxygen atoms, a substituted or unsubstituted cycloalkyl group having 5 to 16 carbon atoms or a substituted or unsubstituted alkenyl group having 2 to 16 carbon atoms, n represents zero or an integer from 1 to 4 and D represents a 1,2-naphthoquinone-2-diazide-sulfonyl group.

9. A light-sensitive compound having the formula



in which R_1, R_1', R_2, and R_2' are identical or different and represent hydrogen, chlorine or bromine atoms, alkyl, alkoxy or alkoxyalkyl groups having 1 to 6 carbon atoms or alkenyl groups having 2 to 6 carbon atoms, R_3 represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, R_4 represents a hydrogen atom, a substituted or unsubstituted alkyl group, the carbon chain of which can be interrupted by ether oxygen atoms, a substituted or unsubstituted cycloalkyl group having 5 to 16 carbon atoms or a substituted or unsubstituted alkenyl group having 2 to 16 carbon atoms, n represents zero or an integer from 1 to 4 and D represents a 1,2-naphthoquinone-2-diazide-sulfonyl group.

4,266,002

SUBSTITUTED 1-PHENYL-3-PYRAZOLIDINONE ELECTRON TRANSFER AGENTS

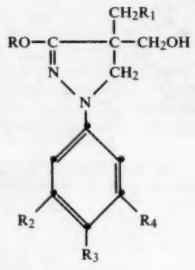
Michael D. McCreary; William C. Farley, both of Rochester, and Wayne F. Erickson, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 948,063, Oct. 2, 1978. This application Oct. 1, 1979, Ser. No. 80,754

Int. Cl.³ G03C *1/40, 7/26*

U.S. Cl. 430—218 **3 Claims**

1. In a dye image-receiving element comprising a support having thereon a dye image-receiving layer, the improvement wherein said element contains a silver halide electron transfer agent precursor having the following formula:



wherein:

R is hydrolyzable moiety;

R_1 is hydrogen or a hydroxy group;

R_2, R_3 and R_4 each represent hydrogen, hydroxy, an alkyl group of 1 to 3 carbon atoms, an alkoxy group of 1 to 3 carbon atoms, a phenyl group, —$NHSO_2R_5$, —$O(CH_2)_nOR_6$, —$(CH_2)_nOR_6$, —$O(CH_2)_nC_6H_5$, —$(CH_2)_nR_7$ or —$O(CH_2)_nR_7$;

R_5 is hydrogen or an alkyl group of 1 to 3 carbon atoms;

R_6 is hydrogen or a methyl group;

R_7 is $NHSO_2R_5$ or SO_2NHR_5; and

n is a positive integer of 1 to 2;

with the proviso that at least one of said R_2, R_3 and R_4 must be one of said groups other than hydrogen.

4,266,003

SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Tadashi Ikeda; Takeo Sakai; Haruo Takei, and Noriyuki Inoue, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

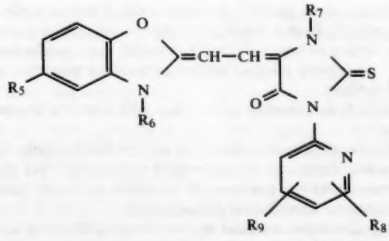
Filed Sep. 25, 1979, Ser. No. 78,756

Claims priority, application Japan, Sep. 25, 1978, 53/117668

Int. Cl.³ G03C *1/10*

U.S. Cl. 430—264 **22 Claims**

6. A lithographic silver halide photographic material comprising a support having thereon a silver halide emulsion layer containing at least one compound represented by the formula (II):



(II)

wherein R_5 represents a hydrogen atom, a chlorine atom, a hydroxyl group, an alkylcarbonyloxy group having up to 3 carbon atoms, an unsubstituted alkyl group having up to 4 carbon atoms, or an unsubstituted alkoxy group having up to 4 carbon atoms; R_6 represents a sulfoalkyl group having 2 to 4 carbon atoms; R_7 represents a hydroxyalkoxyalkyl group having 2 to 6 carbon atoms, or a hydroxyalkyl group having 2 to 4 carbon atoms; R_8 represents a hydrogen atom, a chlorine atom, a methyl group, an ethyl group, a methoxy group, or an ethoxy group; and R_9 represents a hydrogen atom, a methyl group, or a methoxy group; and said emulsion layer and optionally an adjacent hydrophilic colloid layer contains a polyalkylene oxide compound.

4,266,004

PHOTOIMAGEABLE MATERIAL OF POLYMERIC MATERIAL HAVING ORGANIC SULFIDE AND PHOTO-OXIDATION SENSITIZER

Roland J. Kern, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 756,034, Dec. 30, 1976, abandoned. This application Jul. 26, 1978, Ser. No. 928,323

Int. Cl.[3] **G03C** *1/68*

U.S. Cl. 430—269 **41 Claims**

1. A photoimageable polymeric element comprising a body of polymeric material containing organic sulfide functionality and a photooxidation sensitizer, said sensitizer and said sulfide functionally being present in an amount sufficient so that upon exposure to irradiation in the presence of oxygen a developable latent image is produced in said polymeric material, said exposure being of an intensity insufficient to produce a latent image in the absence of said sulfide functionality.

4,266,005

PHOTOSENSITIVE ELASTOMERIC COMPOSITION

Shohei Nakamura, and Yoshiyuki Suenaga, both of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Sep. 28, 1979, Ser. No. 80,364

Claims priority, application Japan, Oct. 2, 1978, 53-121371

Int. Cl.[3] **G03C** *1/68*

U.S. Cl. 430—271 **13 Claims**

1. A photosensitive elastomeric composition consisting essentially of 30 to 98% by weight, based on the photosensitive elastomeric composition, of a component (a) comprising at least one thermoplastic elastomer having a number average molecular weight of 29,000 to 4,500,000 and selected from homopolymers of a conjugated diene monomer and copolymers of a conjugated diene monomer and a monoene monomer, 1 to 50% by weight, based on the photosensitive elastomeric composition, of a component (b) comprising at least one ethylenically unsaturated compound, 0.01 to 10% by weight, based on the photosensitive elastomeric composition, of a component (c) comprising at least one photopolymerization initiator, and 0.01 to 10% by weight, based on the photosensitive elastomeric composition, of a component (d) comprising at least one N-substituted maleimide compound selected from those maleimides wherein an N- or N,N′-substituent is a straight chain or branched alkyl group having 1 to 22 carbon atoms, a cycloalkyl group having a C_5–C_8 ring unsubstituted or substituted with 1 or 2 substituents selected from straight chain or branched alkyl groups having 1 to 6 carbon atoms, a phenyl or naphthyl group unsubstituted or substituted with 1 or 2 substituents selected from straight chain or branched alkyl groups having 1 to 6 carbon atoms and halogen atoms, an aralkyl group having a straight chain or branched C_1–C_6 alkyl moiety and a phenyl moiety unsubstituted or substituted with 1 or 2 substituents selected from straight chain or branched alkyl groups having 1 to 6 carbon atoms and halogen atoms, a straight chain or branched alkylene group having 1 to 12 carbon atoms, a phenylene group, a biphenylene group, a 1,6-hexamethylenebiphenylene group, a methylenebiphenylene group or a 2,2-diphenylenepropane group.

4,266,006

PROCESS FOR THE MANUFACTURE OF IMAGED ARTICLES

Fritz Uhlig, and Kurt A. Wehlmnn, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 728,142, Sep. 30, 1976, abandoned. This application Nov. 16, 1978, Ser. No. 961,439

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1975, 2543820

Int. Cl.[3] **G03C** *5/00;* **C08F** *8/00, 2/46;* **B05D** *3/06*

U.S. Cl. 430—300 **7 Claims**

1. A process for the manufacture of an imaged article which comprises:

(a) imagewise irradiating with laser light a material comprising a carrier having on a surface thereof a layer consisting essentially of at least one polymeric material insensitive to non-coherent light, said layer being water-insoluble and insensitive to low intensity light in the visible, near ultraviolet and near infrared spectral region, and said laser having a minimum power sufficient to form an image in said layer, and

(b) removing non-irradiated areas of said layer by treating the layer with a developer in which said non-irradiated areas are soluble but in which irradiated areas are insoluble due to modification of said non-photosensitive material by the laser light.

4,266,007

MULTILAYER PRINTING PLATES AND PROCESS FOR MAKING SAME

Norman E. Hughes, Landenberg, Pa., and Bernard J. Scheve, Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 917,999, Jun. 22, 1978, abandoned. This application Aug. 22, 1979, Ser. No. 68,833

Int. Cl.[3] **G03C** *5/00*

U.S. Cl. 430—306 **7 Claims**

1. The process of making a printing plate which comprises exposing to actinic light, through a photographic negative, a photopolymerizable element comprising: a printing layer of a liquid photopolymerizable composition comprising at least one addition polymerizable compound having a normal boiling point above about 100° C., a molecular weight of less than about 1500 and at least one ethylenically unsaturated group capable of forming a high polymer by photoinitiated polymerization; at least one unsaturated polymeric material which is soluble in said addition polymerizable compound; at least one polymerization inhibitor; and a photoinitiator; and a base layer of a different liquid photopolymerizable composition comprising at least one addition polymerizable compound having a normal boiling point above about 100° C., a molecular weight of less than about 1500 and at least one ethylenically unsaturated group capable of forming a high polymer by photoinitiated polymerization; at least one unsaturated polymeric material which is soluble in said addition polymerizable compound; at least one polymerization inhibitor; and an amount of photoinitiator greater than that in said printing layer such that said base layer has a photopolymerization rate about 1.5 to about 250 times that of said printing layer, said printing layer and base layer compositions having differing crosslinkability such that, upon exposure, the layers have moduli differing by at least about 50 p.s.i.; and removing unpolymerized portions of said layers.

4,266,008

METHOD FOR ETCHING THIN FILMS OF NIOBIUM AND NIOBIUM-CONTAINING COMPOUNDS FOR PREPARING SUPERCONDUCTIVE CIRCUITS

Robert T. Kampwirth, Darien; Ivan K. Schuller, and Charles M. Falco, both of Woodridge, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 23, 1979, Ser. No. 96,859
Int. Cl.[3] H01L *39/02*
U.S. Cl. 430—318 5 Claims

1. A method of preparing a thin film superconducting circuit of niobium or niobium compound comprising:

applying a thin layer of a superconductive niobium or niobium compound to a non-conductive substrate to form a superconductive film;

applying a masking layer of photo-sensitive material on the surface of the superconductive film;

applying a circuit pattern to the masking layer surface of the photo-sensitive material;

exposing and developing the photo-sensitive material to form a circuit pattern of photoresistive material on the surface of the superconductive film;

contacting the film with an aqueous etchant of 8 to 10 w/o HNO_3, 11 to 13 w/o H_2SO_4 and 12 to 13 w/o HF for a period of time sufficient to remove the unmasked superconductive film from the substrate; and

removing the photoresistive material from the surface of the superconductive film, thereby forming a thick film superconducting circuit on a non-conductive substrate.

4,266,009

IMAGING MATERIAL AND METHOD OF PRODUCING IMAGE THEREON

Takeshi Ueda, Fuji; Kiichiro Sasaguri, Tokyo, and Hidehiko Kobayashi, Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 2, 1978, Ser. No. 957,378
Claims priority, application Japan, Nov. 4, 1977, 52/131456; Nov. 7, 1977, 52/132525
Int. Cl.[3] G03C *5/04, 5/24, 1/76*
U.S. Cl. 430—346 14 Claims

1. An imaging material comprising a substrate; a lead layer formed on the substrate and having a substantially dome shaped grain structure, said lead layer consisting of lead, or at least 20% by weight of lead and a member selected from the group consisting of bismuth, indium, aluminum, tin, zinc, antimony, cadmium and combinations thereof; and an inorganic stabilizing layer formed on the lead layer and consisting of a member selected from the group consisting of indium, germanium, antimony, tin and combinations thereof, or at least 80% by weight of a member selected from the group consisting of indium, germanium, antimony, tin and combinations thereof and a member selected from the group consisting of lead, bismuth, aluminum, zinc, cadmium and combinations thereof.

11. A method of producing an image by a dry process, which method comprises the step of providing an imaging material comprising a substrate; a lead layer formed on the substrate and having a substantially dome shaped grain structure, said lead layer consisting of lead or at least 20% by weight of lead and a member selected from the group consisting of bismuth, indiu, aluminum, tin, zinc, antimony, cadmium and combinations thereof; and an inorganic stabilizing layer formed on the lead layer and consisting of a member selected from the group consisting of indium, germanium, antimony, tin and combinations thereof, or at least 80% by weight of a member sel selected from the group consisting of indium, germanium, antimony, tin and combinations thereof and a member selected from the group consisting of lead, bismuth, aluminum, zinc, cadmium and combinations thereof, and the step of applying to said imaging material energy in an amount sufficient to increase the absorbed energy in the lead layer or the lead layer and the inorganic stabilizing layer above a certain critical threshold value to decrease the optical density at the areas where subjected to said applied energy.

4,266,010

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shigeru Nagatomo, and Kiyotaka Hori, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 592,293, Jul. 1, 1975, abandoned. This application Mar. 30, 1979, Ser. No. 26,137
Claims priority, application Japan, Jul. 1, 1974, 49-75516
The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.
Int. Cl.[3] G03C *5/26, 1/78*
U.S. Cl. 430—355 10 Claims

1. A silver halide photographic light-sensitive material containing at least one photographic layer containing silver halide and an uppermost layer containing as a binder acid-processed gelatin and polymethylmethacrylate as a matting agent which is powdered and which has average particle sizes of about 0.2 to 10μ.

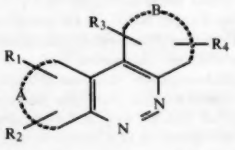
4,266,011

PROCESS FOR THE PRODUCTION OF COLORED PHOTOGRAPHIC IMAGES BY THE SILVER DYE-BLEACH PROCESS

Gerald Jan, Marly, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Sep. 20, 1979, Ser. No. 77,461
Claims priority, application Switzerland, Sep. 29, 1978, 10196/78
Int. Cl.[3] G03C *7/00*
U.S. Cl. 430—392 20 Claims

1. A process for the production of coloured photographic images by the silver dye-bleach process by imagewise exposure and subsequent processing by developing the silver image, dye-bleaching and silver bleaching, optionally the last two steps can be combined, silver fixing and washing, which comprises carrying out dye-bleaching and/or silver bleaching in the presence of at least one bleach catalyst of the formula

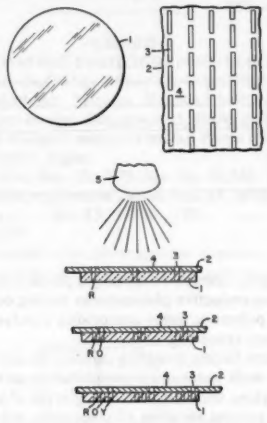


in which A and B are in each case the non-metallic atoms necessary to complete a benzene or pyridine ring, R_1 and R_3 are each hydrogen, hydroxyl, halogen, alkyl or alkoxy, each having 1 to 4 carbon atoms, carboxyl, carbalkoxy or carbalkoxyalkoxy each having 1 to 4 carbon atoms per alkoxy moiety, $-CH_2OH$, $-O(CH_2)_nOH$, $-O(CH_2)_2O(CH_2)_2OH$, $-CH_2Cl$, $-CH_2Br$, $-NR_5R_6$, $-CH_2NR_5R_6$, $-O(CH_2)_nNR_5R_6$, $-CH_2SO_3M$, $-O(CH_2)_nSO_3M$ or $-SO_3M$, R_2 and R_4 are each hydrogen, hydroxyl or alkyl or alkoxy, each having 1 to 4 carbon atoms, and R_5 and R_6 are each hydrogen or alkyl having 1 to 4 carbon atoms, M is hydrogen, an alkali metal, ammonium or alkyl-ammonium having 1 to 4 carbon atoms per alkyl radical and n is an integer from 2 to 4.

4,266,012
COLOR PHOTOGRAPHIC PROCESS UTILIZING POLYCHROMATIC GLASS

Stanley D. Stookey, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Oct. 5, 1979, Ser. No. 82,143
Int. Cl.³ G03C 5/04
U.S. Cl. 430—396 **43 Claims**



1. In the screen-plate color photographic process wherein the camera exposure is made through a screen consisting of a patterned mosaic array of red, green, and blue filters applied as coatings onto the surface of a glass plate, said screen being placed into contact with a panchromatic film of the type utilized in black-and-white photography, and after exposure the film is developed to provide a positive image, the improvement comprising utilizing as said glass plate a glass body suitable as said glass plate or a glass body suitable for attachment to said glass plate to form a composite unit, said glass body having a thickness of 0.01–1.5 mm and having within its surface an integral, patterned, uniform micromosaic array of polycolor elements consisting of 3–8 subelement color filters, said patterned array being so designed that all the space will be filled with colors or the presence of colorless portions will be strictly limited to controlled areas, the size of said polycolor elements not exceeding about 0.020", said glass plate being prepared by the following steps:

(a) forming said glass body suitable as said glass plate or said glass body suitable for attachment to said glass plate to form a composite unit from a composition consisting essentially, in weight percent on the oxide basis as calculated from the batch, of about 10–20% Na_2O, 0.0005–0.3% Ag, 1–4% F, an amount of at least one halide selected from the group of Cl, Br, and I at least sufficient to react stoichiometrically with the Ag, but not more than 3%, and the remainder SiO_2;

(b) exposing said glass body to high energy or actinic radiation for a period of time sufficient to produce a latent image therein capable of being developed into said integral, patterned, uniform micromosaic array of polycolor elements utilizing a method selected from the group consisting of:

(1) a single exposure through a patterned, continuous tone, black-and-white photographic negative, the pattern having 3–8 different optical densities;

(2) 3–8 exposures through appropriately patterned screens or stencils;

(3) a scanning exposure to a focused beam or a laser beam of ultraviolet radiation;

(c) heating at least said exposed portions of said glass body to a temperature between the transformation range of the glass and the softening point thereof for a sufficient length of time to cause nucleation and growth of microcrystals os alkali metal fluoride containing at least one silver halide selected from the group of silver chloride, silver bromide, and silver iodide in the areas of said latent image;

(d) subjecting at least said previously-exposed portions of said glass body to high energy or actinic radiation while at least said portions are at a temperature between about 200°–410° C. for a sufficient length of time to cause metallic silver to be deposited as discrete colloidal particles less than about 200 A in the smallest dimension, and/or deposited upon the surface of said microcrystals, the silver-coated part of the microcrystal being less than about 200 A in the smallest dimension, and/or deposited within said microcrystals, the silver-containing part of said microcrystal being less than 200 A in the smallest dimension, said microcrystals having a concentration of at least 0.005% by volume and causing the desired integral coloration; and then

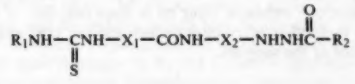
(e) cooling said glass body to ambient temperature.

4,266,013
DIRECT POSITIVE SILVER HALIDE LIGHT-SENSITIVE MATERIAL AND METHOD OF FORMING DIRECT POSITIVE IMAGE

Keiichi Adachi; Shigeo Hirano, and Nobuyuki Tsujino, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Nov. 17, 1978, Ser. No. 961,827
Claims priority, application Japan, Nov. 28, 1977, 52/142469
Int. Cl.³ G03C 1/36
U.S. Cl. 430—410 **16 Claims**

1. A direct positive silver halide photographic light-sensitive material comprising a support having coated thereon an internal latent image type light-sensitive photographic emulsion layer that contains a light-sensitive silver halide of the type which is not previously fogged, and a hydrophilic colloid layer adjacent to said emulsion layer, at least one of said layers containing a compound represented by the formula (I) and present in an amount to give a suitable maximum density when said material is developed by a surface developing solution:



(I)

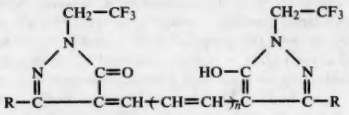
wherein R_1 represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted phenyl group or a substituted or unsubstituted naphthyl group; R_2 represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted alkenyl group, a substituted or unsubstituted phenyl group or a substituted or unsubstituted naphthyl group; and X_1, and X_2, which are the same or different, each represents a substituted or unsubstituted phenylene group or a substituted or unsubstituted naphthylene group.

4,266,014
PHOTOGRAPHIC MATERIALS CONTAINING LIGHT ABSORBING METHINE DYES

Felix J. Moelants, Wilrijk, and Henri Depoorter, Mortsel, both of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Feb. 15, 1980, Ser. No. 121,736
Claims priority, application United Kingdom, Mar. 2, 1979, 7440/79
Int. Cl.³ G03C 1/84
U.S. Cl. 430—522 **6 Claims**

1. A light-sensitive photographic material containing a light-absorbing dye corresponding to the following general formula:



wherein:

R represents a C_1–C_5 alkyl group, an aryl group or a substituted aryl group, an alkoxycarbonyl group, a carboxy group, or a carbamoyl group, and

n is 0, 1, or 2 and a silver halide emulsion.

4,266,015

LIGHT SENSITIVE MATERIALS WITH FLUORINATED POLYMER ANTISTATS

Louis Butler, Harlow, and Paul H. Ogden, Southport, both of England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 13, 1977, Ser. No. 832,945

Int. Cl.[3] G03C *1/78*

U.S. Cl. 430—527 11 Claims

1. A light sensitive material which includes a support, at least one layer of a photographic silver halide emulsion on at least one face of the support, and (1) as an outer layer over said layer of emulsion on at least one face of the support, a top coat comprising at least 2% by weight of (1) a fluorine-containing homopolymer or (2) a fluorine-containing copolymer with ethylenically unsaturated comonomers which has been derived from at least 2% by weight of reactants of a fluorine-substituted alkyl ester of an ethylenically unsaturated carboxylic acid wherein there are no more than one H or Cl per two carbon atoms on the fluorinated alkyl group and no more than one skeletal O or N per two carbon atoms on the fluorinated alkyl group or (2) said fluorine-containing polymer being present in at least one emulsion layer on at least one face of the support or in another layer intermediate the top coat and at least one face of the support.

4,266,016

ANTISTATIC LAYER FOR SILVER HALIDE PHOTOGRAPHIC MATERIALS

Sukeaki Date, and Seigo Ebato, both of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Aug. 27, 1979, Ser. No. 69,864

Claims priority, application Japan, Aug. 25, 1978, 53/103660; Jan. 20, 1979, 54/5688

Int. Cl.[3] G03C *1/78, 1/96*

U.S. Cl. 430—527 18 Claims

1. In a silver halide photographic material which comprises a support having hydrophobic surface and at least one silver halide emulsion layer thereon, the improvement comprising an antistatic layer which comprises (a) a styrene-maleic anhydride copolymer, (b) colloidal silica and (c) at least one compound selected from the group consisting of compounds having at least 2 ethyleneimino groups in a molecule and compounds having at least 2 epoxy rings in a molecule and which has a pH value of at least about 5, said antistatic layer being provided on one or both surfaces of the support.

4,266,017

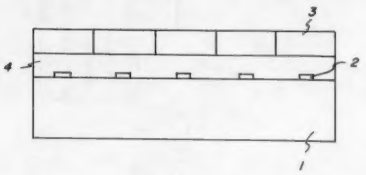
COLOR IMAGING DEVICES HAVING INTEGRAL COLOR FILTER ARRAYS

Thomas W. Martin, Rochester, and M. Akram Sandhu, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 884,514, Mar. 8, 1978, Pat. No. 4,196,009. This application Sep. 4, 1979, Ser. No. 71,962

Int. Cl.[3] G03C *1/76, 1/92;* H01J *31/00;* H04N *9/04*

U.S. Cl. 430—533 3 Claims



1. An imaging element comprising a planar array of charge-handling semiconductive photosensors having coated thereon an adhesive polymeric layer comprising a polyester selected from the group consisting of:

(1) polyesters having recurring carboxylate units of which at least 80 mole percent are terephthalate units, and recurring alkylene units derived from glycols of which at least 40 mole percent are ether alkylene units, with the proviso that either (a) the recurring alkylene units comprise at least 60 mole percent ether alkylene units or (b) either the recurring carboxylate units comprise at least 2 mole percent pyromellitictetracarboxylate units or at least 10 mole percent of linear aliphatic dicarboxylate units having at least 8 carbon atoms, and that when at least 10 mole percent of the carboxylate units are said linear aliphatic dicarboxylate units, the total of the mole percent of lower aliphatic dicarboxylate units of the recurring carboxylate units plus the mole percent of ether alkylene units of the recurring alkylene units is at least 60 and

(2) polyesters having recurring alkylene units and recurring carboxylate units wherein at least 30 mole percent of the carboxylate units are alicyclic dicarboxylate units and wherein the remaining carboxylate units are nonlinear aromatic dicarboxylate units.

4,266,018

SILVER HALIDE PHOTOGRAPHIC EMULSIONS

Shoji Ishiguro; Tadao Shishido; Takeo Sakai; Noboru Sasaki, all of Minami-ashigara; Joji Nagaoka, Tokyo, and Minoru Matsuki, Asaka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

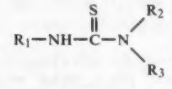
Filed Sep. 25, 1979, Ser. No. 78,622

Claims priority, application Japan, Sep. 25, 1978, 53-117669

Int. Cl.[3] G03C *1/28, 1/34*

U.S. Cl. 430—550 22 Claims

1. A silver halide photographic emulsion containing the compound represented by the formula:



wherein R_1 represents a 5-membered or 6-membered heterocyclic residue containing a nitrogen atom selected from the group consisting of a pyrroline ring, a pyridine ring, a quinoline ring, an indole ring, an oxazole ring, a benzoxazole ring, a naphthoxazole ring, an imidazole ring, a benzimidazole ring, a thiazoline ring, a thiazole ring, a benzothiazole ring, a naphthothiazole

ring, a selenazole ring, a benzoselenazole ring and a naphthoselenazole ring; R_2 represents a hydrogen atom, a lower alkyl group, an allyl group, an aryl group, or an aralkyl group; and R_3 has the same meaning as R_1 or R_2; or R_2 and R_3 may combine to form a heterocyclic ring, wherein the amount of said compound is a sensitizing and antifogging amount within the range from 5×10^{-6} mol to 1×10^{-3} mol per mol of silver halide in the silver halide photographic emulsion.

4,266,019

SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING YELLOW COUPLER

Hidetoshi Kobayashi; Mitsugu Tanaka, both of Minami-ashigara; Kozo Inouye, Odawara, and Hideki Naito, Minami-ashigara, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

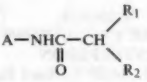
Filed Sep. 13, 1979, Ser. No. 74,945

Claims priority, application Japan, Sep. 13, 1978, 53/112618

Int. Cl.³ G03C *1/40*

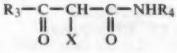
U.S. Cl. 430—551 **7 Claims**

1. A silver halide color photographic material containing a yellow coupler represented by following general formula (I);



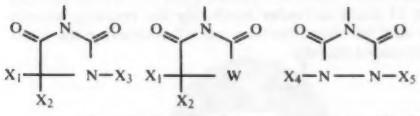
(I)

wherein A represents a yellow coupler from which one hydrogen atom bound to a carbon atom other than at a coupling active site is removed having the formula (II);

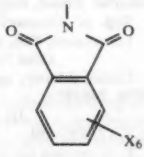


(II)

wherein R_3 represents an aliphatic group, an aromatic group or a heterocyclic ring, R_4 represents an aromatic group or a heterocyclic ring, wherein X is represented by the formulae (VI)–(IX);



(VI) (VII) (VIII)



(XI)

wherein X_1 and X_2 each represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, or a hydroxy group, X_3, X_4 and X_5 each represents a hydrogen atom, an alkyl group, an aryl group, an aralkyl group or an acyl group, W represents an oxygen atom or a sulfur atom and X_6 represents a monovalent substituent, and R_1 and R_2 each represents a straight chain or branched alkyl group containing 2 to 16 carbon atoms, with the sum of the carbon atoms contained in R_1 and R_2 being 10 to 20.

7. The color photographic material of claim **6**, wherein said silver halide emulsion layer or an adjacent layer contains a p-substituted phenol derivative.

4,266,020

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Nobuo Sakai; Kotaro Nakamura; Masakazu Morigaki, and Nobuo Furutachi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

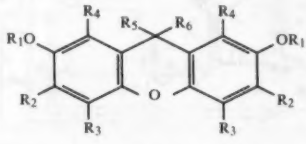
Filed Oct. 4, 1979, Ser. No. 81,986

Claims priority, application Japan, Oct. 5, 1978, 53-12307

Int. Cl.³ 430 *216;* **G03C** *1/40, 7/00*

U.S. Cl. 430—551 **20 Claims**

1. A color photographic color coupler-containing silver halide light-sensitive material containing, in a photographic layer, at least one compound represented by the following general formula (I):



(I)

wherein R_1 represents a hydrogen atom, an alkyl group, a heterocyclic group, a dialkylsilyl group, a trialkylsilyl group, an alkanesulfonyl group, an arylsulfonyl group, an aralkanesulfonyl group or an -X-Y group in which X represents a carbonyl group, and Y represents an alkyl group, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group, an aralkoxy group, an alkylamino group, a dialkylamino group, an arylamino or diarylamino group, an alkoxycarbonyl group, an aryloxycarbonyl group, an aralkoxycarbonyl group or an acyl group; R_2, R_3 and R_4, which may be the same or different, each represents a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, an aryloxy group, an aralkyl group, an aralkoxy group, an alkenyl group, an alkenoxy group, an acylamino group, a halogen atom, an alkylthio group, an arylthio group, a diacylamino group, an acyl group, a sulfonamido group, an alkylamino group, an alkoxycarbonyl group or an acyloxy group; and R_5 and R_6, which may be the same or different, each represents a hydrogen atom, an alkyl group, an aryl group or an aralkyl group, or R_5 and R_6 are bonded each other to form a 5-membered, 6-membered or 7-membered ring.

4,266,021

METHOD AND APPARATUS FOR THE MEASUREMENT OF THE CONCENTRATION OF A COMPOUND IN A LIQUID MEDIUM

Ulf T. G. Nylen; Lars-Göran Olsson; Bengt G. Paulsson; Lars A. G. Qvarnström, all of Lund, and Rolf H. L. Wichers, Södra Sandby, all of Sweden, assignors to Gambro AB, Sweden

Filed Dec. 11, 1978, Ser. No. 968,202

Claims priority, application Sweden, Dec. 16, 1977, 7714335

Int. Cl.³ C12M *1/34;* **C12Q** *1/54;* **G01N** *31/14*

U.S. Cl. 435—14 **44 Claims**

1. A method of measuring the concentration of a compound in a liquid medium comprising the steps of:

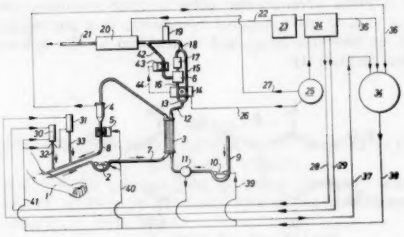
providing a reaction chamber which contains enzymes for promoting the conversion of said compound whose concentration is to be measured into a converted reaction product when said liquid medium containing said compound whose concentration is to be measured is conducted therethrough, said reaction chamber having an inlet and an outlet, and said inlet being at an elevation above said outlet;

arranging a venting device at an elevation above said inlet of said reaction chamber and in fluid communication with said inlet of said reaction chamber, said venting device including a gas permeable membrane having pores to

allow gaseous bubbles to pass therethrough, said membrane being substantially impervious to the flow of liquid therethrough;

conducting said liquid medium containing said compound whose concentration is to be measured through said venting device in contact with said gas permeable membrane for venting of gaseous bubbles through said gas permeable membrane so as to provide a liquid medium with gaseous bubbles removed therefrom;

conducting said liquid medium with said gaseous bubbles removed therefrom from said venting device to said inlet of said reaction chamber;



conducting said liquid medium with said gaseous bubbles removed therefrom from said inlet of said reaction chamber to said outlet of said reaction chamber to thereby promote conversion of said compound whose concentration is to be measured into a converted reaction product and provide a processed liquid medium; and

then conducting said processed liquid medium from said outlet of said reaction chamber to a measuring unit for measuring the concentration of said converted reaction product in said processed liquid medium, the concentration of said converted reaction product being representative of the concentration of said compound in said liquid medium.

4,266,022

PROCESS FOR THE DETERMINATION OF AT LEAST ONE OF THE ISO-ENZYMES OF LACTATEDEHYDROGENASE

Walther Lamprecht, Isernhagen FB, Fed. Rep. of Germany, assignor to Kommanditgesellschaft Schwarzhaupt, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 723,649, Sep. 15, 1976, abandoned, which is a division of Ser. No. 612,633, Sep. 12, 1975, Pat. No. 4,003,797. This application Jul. 10, 1978, Ser. No. 923,641

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1974, 2443741

The portion of the term of this patent subsequent to Jan. 18, 1994, has been disclaimed.

Int. Cl.³ C12Q *1/32*

U.S. Cl. 435—26 **11 Claims**

1. In a test reagent for the determination of at least one of the isoenzymes of lactate dehydrogenase by means of the conversion of lactate and nicotinamide-adeninedinucleotide to pyruvate by a reduction reaction comprising (a) a lactate, (b) nicotinamide-adeninedinucleotide, (c) a tetrazolium salt for rendering visible the enzymatic NAD reduction reaction mixture and (d) a buffer the improvement comprising a buffer in an amount sufficient to ensure that the test mixture composed of test reagent and sample in which the determination will take place has a pH value of 6–6.5.

4,266,023

GLYCEROL OXIDASE AND PROCESS FOR THE PRODUCTION THEREOF AND METHOD FOR THE QUANTITATIVE DETERMINATION OF GLYCEROL BY GLYCEROL OXIDASE

Osamu Terada; Takayuki Uwajima; Akira Mihara; Kazuo Aisaka, all of Machida; Hiroko Akita, Yokohama; Toshiaki Nagai, and Yoshiaki Shimizu, both of Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 897,695, Apr. 19, 1978, Pat. No. 4,202,941. This application Nov. 19, 1979, Ser. No. 95,517

Claims priority, application Japan, Apr. 19, 1977, 52-44146

Int. Cl.³ C12Q *1/28, 1/26*

U.S. Cl. 435—28 **4 Claims**

1. A method for the quantitative determination of glycerol in solution which comprises reacting glycerol oxidase, an enzyme having the ability to oxidize glycerol in the presence of oxygen to form hydrogen peroxide and gylceraldehyde, with the glycerol in the presence of oxygen and measuring the amount of oxygen consumed, or the amount of hydrogen peroxide or glyceraldehyde formed in an aqueous medium by the action of said glycerol oxidase, said amount being an indication of the concentration of glycerol in said solution.

4,266,024

PROCESS FOR THE PRODUCTION OF HUMAN INTERFERON

Peter Swetly; Günther R. Adolf; Gerhard Bodo, all of Vienna; Silvia J. Lindner-Frimmel, Perchtoldsdorf; Peter Meindl, and Hans Tuppy, both of Vienna, all of Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

Filed May 14, 1979, Ser. No. 38,787

Claims priority, application Fed. Rep. of Germany, May 17, 1978, 2821466; Feb. 17, 1979, 2906160

Int. Cl.³ C12P *21/00*

U.S. Cl. 435—68 **6 Claims**

1. A process for the preparation of human interferon, which comprises the steps of (1) adding to a permanent cell line of lymphoid origin a stimulator substance selected from the group consisting of N,N'-diacetylated alkylene-α,ω-diamines of 4 to 8 carbon atoms in the alkylene moiety, dimethylsulfoxide, 11 β-substituted glucocorticoids where the substituent is halogen, hydroxyl or hydroxymethyl, and mixtures thereof; (2) at least 12 hours thereafter incubating the resulting mixture with a viral interferon inducer; and (3) recovering the interferon produced thereby.

4,266,025

PRODUCTION OF N-SUBSTITUTED DERIVATIVES OF 1-DESOXY-NOJIRIMYCIN

Günther Kinast, and Michael Schedel, both of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

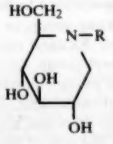
Filed Nov. 23, 1979, Ser. No. 97,099

Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853573

Int. Cl.³ C12P *19/26, 17/12*

U.S. Cl. 435—84 **6 Claims**

1. A process for the production of a compound of the formula

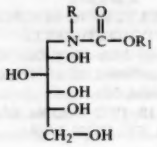


(I)

in which

R denotes a hydrogen atom or an optionally substituted

alkyl, alkenyl, aralkyl or aryl group, which comprises reacting microbiologically a compound of the general formula



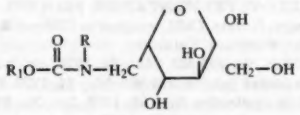
(X)

in which

R has the above-mentioned meaning and

R_1 denotes an optionally substituted benzyl radical or an optionally substituted β-alkenyl group,

an aerobic microorganism or an extract of aerobic microorganism capable, in a nutrient medium containing a compound of formula (X), of accumulating an amount of a compound of the formula



(XI)

in which

R and R_1 have the above-mentioned meanings and subjecting the resulting compound of general formula (XI) to catalytic hydrogenation.

4,266,026

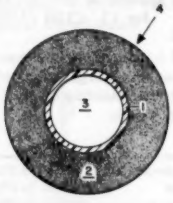
CATALYTIC PROCESS UTILIZING HOLLOW FIBER MEMBRANES

Barry R. Breslau, Acton, Mass., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 601,959, Aug. 4, 1975, abandoned. This application Mar. 10, 1977, Ser. No. 776,339

Int. Cl.³ C07G *7/02*; B01D *13/00*

U.S. Cl. 435—99 **9 Claims**



1. A process for performing catalytic reactions utilizing an anisotropic hollow fiber membrane having a central opening or lumen radially surrounded by a continuous microporous skin layer serving as the active membrane and an outside macroporous sponge layer contiguous with the skin and serving to support the same, which comprises:

(a) backflushing under hydraulic pressure a solution or dispersion containing catalyst molecules from the outside of the fiber membrane to the inside lumen to effect disposition of the catalyst molecules on the macroporous sponge layer, said catalyst molecules being selected from those too large to permeate the microporous openings in the skin layer;

(b) applying hydraulic pressure to a solution containing a reactant substrate capable of undergoing reaction in the presence of the catalyst to force intimate contact between the reactant and the catalyst deposited in the sponge layer to form a product; and

(c) removing under hydraulic pressure any unreacted reactant and the product from the sponge layer and recovering the same.

4,266,027

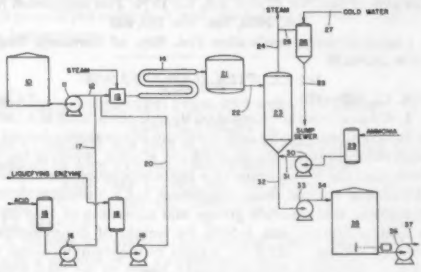
PROCESS FOR THE HYDROLYSIS OF STARCH AND FERMENTABLE HYDROLYSATES OBTAINED THEREFROM

Werner C. Muller, Dobbs Ferry, N.Y., and Franklyn D. Miller, Cincinnati, Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Filed Mar. 12, 1980, Ser. No. 129,517

Int. Cl.³ C13K *1/06*

U.S. Cl. 435—99 **17 Claims**



1. A process for the hydrolysis of starch to provide an aqueous solution of fermentable sugar which comprises:

(a) liquefying an aqueous slurry of starch in the presence of a liquefying agent selected from the group consisting of strong acid and liquefying enzyme to provide sterile liquefied starch; and,

(b) saccharifying the liquefied starch in the presence of a catalytically effective amount of an acidic cationic exchange resin.

4,266,028

PROCESS FOR PREPARATION OF PRODIGIOSIN

Katsumi Nakamura, and Kumpei Kitamura, both of Takasaki, Japan, assignors to Kirin Beer Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,599

Int. Cl.³ C12P *17/16*

U.S. Cl. 435—118 **4 Claims**

1. A process for preparation of prodigiosin, which comprises cultivating *Serratia marcescens* R-2 strain having an ATCC number of 31453 in a culture medium, thereby to produce prodigiosin in the bacterial cells or the medium, and collecting the produced prodigiosin.

4,266,029

ENZYME IMMOBILIZATION

Sven Branner-Jørgensen, Charlottenlund, Denmark, assignor to Novo Industri A/S, Denmark

Filed Aug. 10, 1979, Ser. No. 65,532

Claims priority, application United Kingdom, Aug. 14, 1978, 33295/78

Int. Cl.³ C12N *11/14*

U.S. Cl. 435—176 **21 Claims**

1. Process for preparation of an immobilized enzyme product which comprises:

coating a particulate, dense material with gelatine then treating the so-coated material of particle size between about 0.1 and 1 mm with glutaraldehyde;

preparing a paste comprising an enzyme product and an aqueous polyethylene imine solution;
mixing the glutaraldehyde treated particulate material with the paste;
thereafter treating the resulting pasty mixture with glutaraldehyde to form a mass; and
granulating and drying the said mass.

4,266,030

MACROPOROUS POLYMERIC CARRIER FOR COVALENTLY BINDING PROTEINS, ITS PREPARATION AND ITS USE FOR FIXING ACTIVE PROTEINS

Chung-Ji Tschang, Frankenthal; Heinrich Klefenz, Hochdorf-Assenheim, and Axel Sanner, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 57,010, Jul. 12, 1979. This application May 5, 1980, Ser. No. 146,400

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834539

Int. Cl.³ C12N *11/08;* **C08J** *9/00*

U.S. Cl. 435—180 **3 Claims**

1. A macroporous crosslinked styrene resin, used as a carrier in which a biologically active protein is covalently bound via isocyanate, thiocyanate or aldehyde groups, wherein the sulfonic acid chloride groups of a sulfochlorinated macroporous crosslinked styrene resin, containing 1–4.5 milliequivalents/g of sulfonic acid chloride groups and consisting of 50–97% by weight of styrene and 3–50% by weight of divinylbenzene, with or without 1–25% by weight of ethylvinylbenzene and with or without 1–10% by weight, based on the total weight, of a further comonomer are reacted with an α,ω-diamino compound of the formula

$$H_2N—(CH_2)_n—NH_2$$

where n is a number from 2 to 12, with hydrazine or with an α,ω-diamino-diether of the formula

$$H_2N—(CH_2)_3—O—X—O—(CH_2)_3—NH_2$$

where X is $—(CH_2)_n—$, n being a number from 2 to 6, or where X is a 2,2-dimethyl-1,3-propylene or 3-methyl-1,5-pentylene radical, and any sulfonic acid chloride groups still remaining are hydrolyzed to the free sulfonic acid or saponified to its sodium salt or reacted with a primary or secondary amine to give sulfonamide groups, after which the terminal amino groups from the first process step are reacted with phosgene, thiophosgene, an aliphatic, aromatic or cycloaliphatic diisocyanate or an aliphatic dialdehyde of the formula

$$OCH—(CH_2)_n—CHO$$

where n is a number from 1 to 8, to prepare the binding groups.

4,266,031

PROTEASE PRODUCT OF REDUCED ALLERGENICITY

Peter Tang; Grethe C. Nielsen, both of Tastrup; Keith Gibson, Vaerloese; Knud Aunstrup, Farum, and Hans Schiff, Soeborg, all of Denmark, assignors to Novo Industri A/S, Denmark

Filed Jul. 3, 1979, Ser. No. 54,555

Claims priority, application United Kingdom, Jul. 4, 1978, 28773/78

Int. Cl.³ C12N *9/96, 9/56*

U.S. Cl. 435—188 **6 Claims**

1. A protease preparation having therein a *B. licheniformis derived protease concentrate, wherein said protease concentrate:*
is stabilized by the presence therein of at least 0.5 percent by weight thereof of non-proteolytic peptides from the culture broth wherein the protease was generated;
is essentially free of non-serine protease; and,
exhibits substantially attenuated allergenic properties as compared to a non-serine protease containing *B. licheniformis* protease concentrate.

4,266,032

METHOD OF CULTURING MICROCARRIER SUPPORTED CELLS

Robert E. Miller, Balwin; Mau-Jung Kuo, Creve Coeur, and Charles Lewis, Jr., Hazelwood, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Aug. 10, 1979, Ser. No. 65,652

Int. Cl.³ C12N *5/02*

U.S. Cl. 435—241 **13 Claims**

1. In the method of growing anchorage dependent cells in suspension the improvement comprising employing in the suspension as a microcarrier support for attachment of cells a cross-linked polystyrene resin derivatized by reaction with material selected from the group consisting of amino acid, peptide and hydroxy carboxylic acid and bonded thereto through a carboxyl group of said material.

4,266,033

CELLULOSE FERMENTATION PROCESS

Malcolm S. Singer, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 892,058, Mar. 31, 1978, which is a continuation-in-part of Ser. No. 795,680, May 11, 1977, Pat. No. 4,110,475. This application Nov. 30, 1979, Ser. No. 99,228

Int. Cl.³ C12N *1/22*

U.S. Cl. 435—252 **2 Claims**

1. A method for accelerating the rate of cellulose fermentation by cellulose-digesting sewage bacteria or rumen bacteria which comprises conducting said fermentation in the presence of a rate-accelerating amount of a compound selected from 2-(chloromethyldithio)acetic acid, 2-(dichloromethyldithio)-acetic acid or 2-(trichloromethyldithio)acetic acid.

4,266,034

METHOD FOR PRODUCING MICROBIAL CELLS AND USE THEREOF TO PRODUCE OXIDATION PRODUCTS

Ramesh N. Patel; Ching-Tsang Hou, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation-in-part of Ser. No. 896,476, Apr. 14, 1978, abandoned. This application Mar. 27, 1979, Ser. No. 24,307

Int. Cl.³ C12N *15/00*

U.S. Cl. 435—253 **3 Claims**

1. Isolated and biologically pure microbial cultures of C_1 compound utilizing microorganisms, said cultures being selected from the group consisting of those having the following identifying characteristics:

Methylosinus trichosporium	(CRL 15 PM1)	NRRL B-11,202
Methylosinus sporium	(CRL 16 PM2)	NRRL B-11,203
Methylocystis parvus	(CRL 18 PM4)	NRRL B-11,204
Methylomonas methanica	(CRL M4P)	NRRL B-11,205
Methylomonas methanica	(CRL 21 PM7)	NRRL B-11,206
Methylomonas albus	(CRL M8Y)	NRRL B-11,207
Methylomonas streptobacterium	(CRL 17 PM3)	NRRL B-11,208
Methylomonas agile	(CRL 22 PM9)	NRRL B-11,209
Methylomonas rubrum	(CRL M6P)	NRRL B-11,210
Methylomonas rubrum	(CRL 20 PM6)	NRRL B-11,211
Methylomonas rosaceus	(CRL M10P)	NRRL B-11,212
Methylomonas rosaceus	(CRL M7P)	NRRL B-11,213
Methylobacter chroococcum	(CRL M6)	NRRL B-11,214
Methylobacter chroococcum	(CRL 23 PM8)	NRRL B-11,215
Methylobacter bovis	(CRL M1Y)	NRRL B-11,216
Methylobacter bovis	(CRL 19 PM5)	NRRL B-11,217
Methylobacter vinelandii	(CRL M5Y)	NRRL B-11,218
Methylococcus capsulatus	(CRL M1)	NRRL B-11,219
Methylococcus minimus	(CRL 24 PM12)	NRRL B-11,220
Methylococcus capsulatus	(CRL 25 PM13)	NRRL B-11,221
Methylobacterium organophilum	(CRL 26 R6)	NRRL B-11,222
Pichia sp.	(CRL-72)	NRRL Y-11,328

-continued

Torulopsis sp.	(A1)	NRRL Y-11,419
Kloeckera sp.	(A2)	NRRL Y-11,420

and mutants thereof, said cultures capable of reproducing themselves and capable of producing secondary alcohol dehydrogenase or monooxygenase enzyme activity in isolatable amounts when cultured under aerobic conditions in a liquid growth medium comprising assimilable sources of nitrogen and essential mineral salts in the presence of methane or a methyl radical donating compound as the major carbon and energy source.

4,266,035

PROCESS FOR DECOLORIZING PULP AND PAPER MILL WASTEWATER AND MICROORGANISM CAPABLE OF SAME

James E. Blair, Roanoke, and Lois T. Davis, Salem, both of Va., assignors to Sybron Corporation, Rochester, N.Y.

Division of Ser. No. 8,215, Jan. 31, 1979, Pat. No. 4,199,444. This application Jun. 22, 1979, Ser. No. 51,296

Int. Cl.³ C12N *1/20*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of the microorganism *Pseudomonas aeruginosa* having the identifying characteristics of ATCC 31482, said microorganism being capable upon culturing in pulp and paper mill wastewater of utilizing colorant substances in said wastewater as an assimilable source of carbon.

4,266,036

RECOVERY OF POLYMERIC CATION EXCHANGE MATERIALS FOR REUSE BY CONVERTING BY REACTION TO THE PRECURSOR FORM

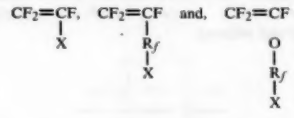
Stanley K. Baczek, and G. Howard McCain, both of Painesville, Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Filed Oct. 23, 1979, Ser. No. 87,328

Int. Cl.³ C25B *13/08*; C08L *27/12*; C08J *5/22, 7/12*

U.S. Cl. 521—26 **2 Claims**

1. A method of recovering for reuse cation exchange polymeric material polymerized from at least two monomers, one said monomer consisting essentially of at least one fluorinated vinyl compound and said other monomer consisting essentially of at least one monomer of the structure



wherein R_f is a bifunctional perfluorinated radical containing from 2 to 8 carbon atoms, which carbon atoms may be interrupted by one or more oxygen atoms, and X is selected from the group consisting of sulfonic acid and carboxylic acid, said method comprising, converting said cation-exchange polymeric material to a precursor form selected from the corresponding sulfonyl fluoride, carbonyl fluoride, sulfonate ester and carboxylate ester, thereafter dissolving said precursor form in at least one solvent selected from the group consisting of low molecular weight polymers of perhalogenated alkylethers, low molecular weight polymers of perhalogenated alkyls and perflourokerosenes, each having boiling points between about 200° C. and 350° C., separating said dissolved polymeric material in the precursor form from any impurities, thereafter resolidifying said purified polymeric material in the precursor form in the desired shape.

4,266,037

FIRE-RETARDANT IMIDE COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed May 7, 1980, Ser. No. 147,664

Int. Cl.³ C08J *9/12*

U.S. Cl. 521—82 **8 Claims**

1. A process for making fire-retardant foams consisting of blending a mixture of (a) a copolymer of 50 to 95 mole percent of a monovinyl aromatic monomer and 5 to 50 mole percent of an imide derivative of an ethylenically unsaturated dicarboxylic acid monomer; (b) from 0.5 to 10 percent by weight of water; (c) from 10 to 20 parts per hundred parts of copolymer of an at least tri-brominated diphenylether; and (d) 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether until an intimate blend is obtained; heating the blend to a temperature of between 125° and 190° C. under sufficient pressure to prevent foaming of the blend; releasing the pressure to allow the blend to expand to a foam of density between 1 and 10 pounds per cubic foot; and cooling the resultant foam to room temperature.

4,266,038

RUBBER-MODIFIED FIRE-RETARDANT IMIDE COPOLYMERS

Adolph V. DiGiulio, and Jack N. Bauer, both of Pittsburgh, Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed May 7, 1980, Ser. No. 147,665

Int. Cl.³ C08J *9/12*

U.S. Cl. 521—82 **8 Claims**

1. A process for making fire-retardant foams consisting of blending a mixture of (a) a rubber-modified copolymer of 5 to 40 weight percent of a rubber selected from the group consisting of homopolymers of conjugated dienes, copolymers of said dienes with up to 50 weight percent of one or more monoolefinically unsaturated monomers, ethylene-propylene-diene terpolymer rubbers, acrylate diene copolymer rubbers, and mixtures thereof and 95–60 weight percent of a copolymer of 50 to 95 mole percent of a monovinyl aromatic monomer and 5 to 50 mole percent of an imide derivative of an ethylenically unsaturated dicarboxylic acid monomer; (b) from 0.5 to 10 percent by weight of water; (c) from 10 to 20 parts per hundred parts of copolymer of an at least tri-brominated diphenylether; and (d) 4 to 8 parts per hundred parts of copolymer of a metal oxide synergist for the ether until an initimate blend is obtained; heating the blend to a temperature of between 125° and 190° C. under sufficient pressure to prevent foaming of the blend; releasing the pressure to allow the blend to expand to a foam of density between 1 and 10 pounds per cubic foot; and cooling the resultant foam to room temperature.

4,266,039

FIREPROOF ELASTIC PACKING MATERIAL

Jacques P. Hons-Olivier, Paris; Tri Le Thanh, La Garenne Colombes, and Francois M. Devanz, Paris, all of France, assignors to Impervia, Societe d'Etudes et de Realisations, Courbevoie, France

Continuation-in-part of Ser. No. 810,778, Jun. 28, 1977, abandoned. This application Feb. 5, 1980, Ser. No. 118,685

Claims priority, application France, Jul. 2, 1976, 76 20217

Int. Cl.³ C08J *9/00*

U.S. Cl. 521—85 **24 Claims**

1. An elastic packing material comprising a shapeable composition which is elastic at low temperature and which swells at high temperature to form a gas impermeable barrier, said composition comprising a vulcanised mixture of a natural or synthetic rubber binder, a vulcanising agent for vulcanising said binder, an intumescent mineral in an amount from about 4 to about 30% by weight of said mixture, and an alkylaryl-phosphate vitrifying agent for vitrifying said intumescent mineral under the action of heat at said high temperature and prevent-

ing pulverization of said intumescent material at said high temperature.

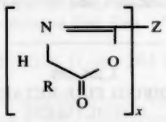
4,266,040

POLYAZLACTONE-ELECTRON DEFICIENT ETHYLENICALLY UNSATURATED RESINOUS COMPOSITIONS AND METHOD FOR FOAMING SAME

Shiow-Ching Lin, Arlington Heights, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed Jun. 27, 1980, Ser. No. 163,519
Int. Cl.[3] C08J 9/08
U.S. Cl. 521—90 21 Claims

1. A foamable composition comprising the reaction product of (1) at least one resin containing a plurality of electron deficient ethylenically unsaturated groups other than vinyl ester and vinyl ether groups and (2) a polyazlactone having the structural formula:



wherein Z is a saturated aliphatic or aromatic polyvalent organic group;

R is selected from the group consisting of hydrogen, saturated substituted and unsubstituted cyclic and acyclic radicals containing about 1 to about 10 carbon atoms, and substituted and unsubstituted aromatic radicals containing about 6 to about 10 carbon atoms; and

x is a number whose average value is at least about 2.

4,266,041

PROCESS FOR THE PRODUCTION OF FOAMED PLASTICS FROM POLYOLEFINS

Werner Kühnel, Neunkirchen-Schöneshof, and Paul Spielau, Troisdorf-Eschmar, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,144
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852287
Int. Cl.[3] C08J 9/06, 9/10
U.S. Cl. 521—92 7 Claims

1. In a process for the production of foamed plastics from polyolefins by peroxide crosslinking and foaming by means of a chemically decomposing foaming agent under conditions of normal pressure the improvement wherein said foaming is carried out in the additional presence of less than 13 weight percent, based on the amount of foaming agent, of magnesium oxide and/or magnesium hydroxide and/or magnesium-hydroxide carbonate having a bulk density of under 800 g/l.

4,266,042

POLYETHER-BASED POLYURETHANE FOAMS INCLUDING A FLAME-RETARDANT SYSTEM CONTAINING ANTIMONY TRIOXIDE, A CHLORINATED PARAFFIN AND ALUMINA TRIHYDRATE AND METHOD OF PREPARATION

Ronald S. Park, Noble Park, Australia, assignor to Henderson's Industries Limited, Parkville, Australia

Continuation-in-part of Ser. No. 935,057, Aug. 18, 1978, abandoned. This application Jun. 27, 1979, Ser. No. 52,540
Claims priority, application Australia, Aug. 22, 1977, PD1318/77; Aug. 15, 1978, 38932/78; Apr. 26, 1979, PD8548/79
Int. Cl.[3] C08G 18/14
U.S. Cl. 521—123 18 Claims

1. A high resilience, flexible or semi-flexible, flame-retardant, polyether based polyurethane foam derived from a diol- or triol-based polyol wherein at least 50% of the hydroxyl end groups are primary hydroxyl end groups and at least one isocoyanate compound and including an effective amount of a flame-retardant system consisting essentially of antimony trioxide, a chlorinated paraffin and alumina trihydrate.

4,266,043

RESILIENT HYDROPHOBIC FOAMED POLYMER

Osamu Fujii, Konosu; Toshio Kishimoto, Saitama, and Akio Kobayashi, Higashi Matsuyama, all of Japan, assignors to Toyo Rubber Chemical Industrial Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 793,598, May 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 603,711, Aug. 11, 1975, abandoned. This application Nov. 5, 1979, Ser. No. 90,892
Claims priority, application Japan, Aug. 15, 1974, 49-93670
Int. Cl.[3] C08G 18/14, 18/12, 18/48
U.S. Cl. 521—175 9 Claims

1. A resilient hydrophobic foamed polymer obtained by reacting a mixture of an isocyanate terminated urethane prepolymer and a polyisocyanate (A) with water, said prepolymer being relatively hydrophilic and the reaction product of a molar excess of a polyisocyanate (B) with a polyetherpolyol having from 15 to 50% by weight of oxyethylene content, said water amounting to between about 15 to 150% by weight based on said prepolymer, the amount of said polyisocyanate (A) ranging between about 5 to 15% by weight based on said prepolymer, said polyetherpolyol being selected from the group consisting of (a) the addition polymerization product of a starting material, ethylene oxide and another epoxide and (b) a mixture of at least two of the following:

(1) The addition polymerization product of a starting material and ethylene oxide;

(2) the addition polymerization product of a starting material and an epoxide other than ethylene oxide;

(3) the addition polymerization material, ethylene oxide and another epoxide,

and said starting material being selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol; dipropylene glycol; butylene glycol; hexylene glycol; glycerol; trimethylolethane; trimethylol propane; 1,2,6-hexanetriol; pentaerythritol; α-methylglycoside; sorbitol and sucrose.

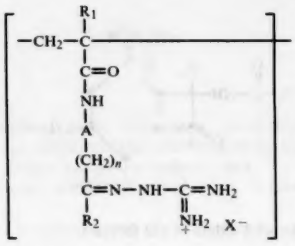
4,266,044

NOVEL POLYMERIC MORDANTING AGENTS FOR ANIONIC COMPOUNDS

Daniël M. Timmerman; Walter F. De Winter, both of Mortsel, and Albert E. Van Hoof, Berchem, all of Belgium, assignors to AGFA-GEVAERT N.V., Mortsel, Belgium

Division of Ser. No. 213,990, Dec. 30, 1971, Pat. No. 4,145,220. This application Dec. 11, 1978, Ser. No. 968,175
Claims priority, application United Kingdom, Jan. 11, 1971, 1288/71; Sep. 10, 1971, 42381/71
Int. Cl.[3] C08C 19/22; C08F 220/60, 26/00, 226/00
U.S. Cl. 525—336 5 Claims

1. A polymeric mordanting agent comprising recurring units of the general structure:



wherein:

R_1 stands for hydrogen or methyl,

A stands for methylene or methylene substituted by C_1–C_5 alkyl,

n stands for 0 or 1,

R_2 stands for alkyl, and

X stands for an acid radical.

4,266,045

ETHERIFIED PHENOLIC CHELATE RESIN, PROCESS FOR ITS PRODUCTION, AND METHOD FOR ADSORPTION TREATMENT

Hiroyuki Uejima, Nara; Masahide Hirai, Kyoto, and Tsutomu Sakaida, Uji, all of Japan, assignors to Unitika Ltd., Amagasaki, Japan

Filed Sep. 11, 1978, Ser. No. 941,355

Claims priority, application Japan, Sep. 12, 1977, 52/110099

Int. Cl.[3] **C08G** *8/10, 8/28, 8/32*

U.S. Cl. 528—161 **20 Claims**

1. An etherified phenolic chelate resin comprising the product obtained on etherification of some or all of the phenolic hydroxyl groups of a phenolic chelate resin with an etherification agent.

4,266,046

ESTERIFICATION PROCESS

Yulin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

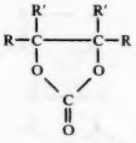
Filed Sep. 17, 1976, Ser. No. 724,189

Int. Cl.[3] **C07C** *67/24, 69/82;* **C08G** *63/42*

U.S. Cl. 528—309 **6 Claims**

1. A process for the preparation of esters of polycarboxylic acids which comprises reacting:

(a) at least one cyclic carbonate ester represented by the general formula



wherein each R and each R′ are individually selected from the group consisting of hydrogen and hydrocarbyl radicals having from 1 to 10 carbon atoms and wherein both R′ radicals can represent a divalent aliphatic hydrocarbon radical which together with the carbonate group in said cyclic carbonate ester can form a cycloaliphatic nucleus; with

(b) at least one polycarboxylic acid having the general formula $Z(CO_2H)_n$ wherein Z is a hydrocarbon radical having the valence equal to n and wherein n is an integer having a value from 2 to 4; in the presence of

(c) a catalytically effective amount of a catalyst selected from the group consisting of

alkyl ammonium halides having the formula $(R''_4N)^+X^-$ wherein R″ is selected from the group consisting of alkyl, cycloalkyl, aryl, alkenyl, cycloalkenyl, and combinations thereof having from 1 to 10 carbon atoms and wherein X^- is a halide ion selected from the group consisting of chloride, bromide, and iodide; under conditions which will produce esters of polycarboxylic acids.

6. A process according to claim 1 wherein the reaction mixture is heated under a reduced pressure so as to remove volatile by-products generated and produce high molecular weight polyester products.

4,266,047

NOVEL POLYMERS OF OLEFIN TERMINATED PREPOLYMERS AND AMINE TERMINATED PREPOLYMERS

Richard J. Jablonski, Scotia, and Daniel Kruh, Schenectady, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 208,929, Dec. 16, 1971, Pat. No. 4,020,303.

This application Dec. 13, 1976, Ser. No. 750,328

The portion of the term of this patent subsequent to Apr. 26, 1994, has been disclaimed.

Int. Cl.[3] **C08G** *73/10, 73/12*

U.S. Cl. 528—322 **6 Claims**

1. A polymer selected from (a) the reaction product of (1) olefin terminated prepolymer prepared by reacting maleic anhydride and amine terminated prepolymer, said amine terminated prepolymer being prepared by reacting a material selected from dicarboxylic acid, dicarboxylic acid anhydride, tricarboxylic acid and tricarboxylic acid anhydride with simple polyamine having the formula

$$X{-}R''{-}(NH_2)_n$$

where R″ is an organic radical, n is at least 2 and X is selected from hydrogen, amino group, substituted organic groups and unsubstituted organic groups and (2) simple polyamine as in (1) above and (b) the reaction product of (1) olefin terminated prepolymer as in (a) above and (2) amine terminated prepolymer as in (a) above, about equivalent proportions of the polymer forming ingredients being used.

4,266,048

SYNTHESIS OF ANALOGS OF 3′-PHOSPHOADENOSINE 5′-PHOSPHOSULFATE (PAPS)

Jerome P. Horwitz; John P. Neenan; Radhey S. Misra; Jurij Rozhin; Anne Huo, all of Detroit, Mich., and Kerstin D. Philips, deceased, late of Detroit, Mich. (by J. Christopher Philips, administrator), assignors to The United States of America as represented by the Department of Health, Education and Welfare, Washington, D.C.

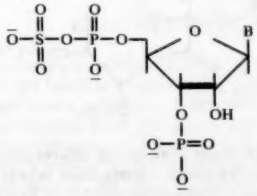
Continuation-in-part of Ser. No. 840,783, Oct. 11, 1977, Pat. No. 4,169,011. This application Oct. 26, 1978, Ser. No. 954,876

The portion of the term of this patent subsequent to Sep. 25, 1996, has been disclaimed.

Int. Cl.[3] **C07H** *19/20, 17/00;* **C12D** *13/06*

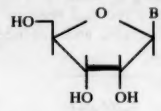
U.S. Cl. 536—27 **5 Claims**

1. A process for the preparation of



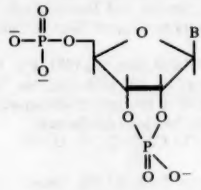
(IV)

3'-phospho B 5'-phosphosulfate
where B is 8-bromoadenine, purine, hypoxanthine, 4-aminopyrrolo[2,3-d]pyrimidine (tubercidin), 7-aminopyrazolopyrimidine (formycin)
by the reaction of



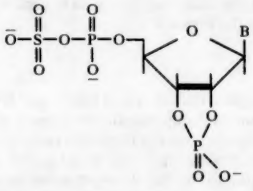
(I)

and pyrophosphoryl chloride to produce a substantially pure



(II)

B-2',3'-cyclic phosphate 5'-phosphate and subsequently reacting II with triethylamine-N-sulfonic acid to produce



(III)

B 2',3'-cyclic phosphate 5'-phosphosulfate which is further treated with ribonuclease-T_2 to provide 3'-phospho B 5'-phosphosulfate.

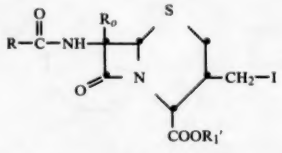
4,266,049

PROCESS FOR 3-IODOMETHYL CEPHALOSPORINS

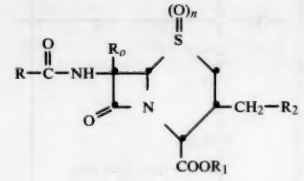
Rosanne Bonjouklian, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Feb. 20, 1980, Ser. No. 122,950
Int. Cl.³ C07D *501/04*
U.S. Cl. 544—16 **20 Claims**

1. A process for preparing a 3-iodomethyl cephalosporin of the formula

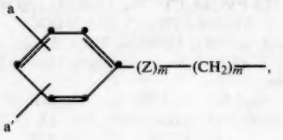


which comprises reacting in an aprotic solvent under substantially anhydrous conditions at a temperature between about 0° C. and about 35° C. a 3-alkanoyloxymethyl or 3-carbamoyloxymethyl cephalosporin of the formula



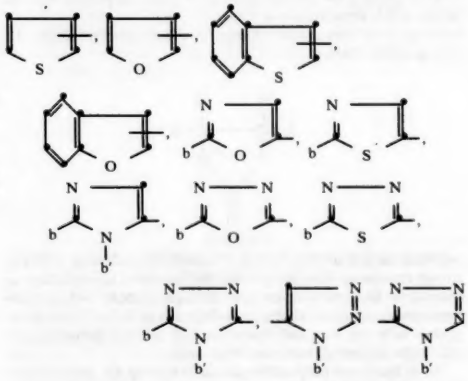
with a trialkylsilyl iodide of the formula

where in the above formulas R is hydrogen, C_1–C_4 alkyl, cyanomethyl, halomethyl, or a group of formula



wherein
a and a' are independently hydrogen, carboxy, carboxymethyl, protected aminomethyl or halogen, C_1–C_3 alkyl, or C_1–C_3 alkoxy;
Z is O or S; m and m' are 0 or 1;
and when m is 1, m' is 1;
or R is a heteroarylmethyl group of the formula

wherein R' is



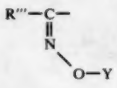
wherein
b is H, C_1–C_3 alkyl, or protected NH_2;
and b' is H, or C_1–C_3 alkyl;
or R is an α-substituted arylmethyl or heteroarylmethyl group of the formula

wherein

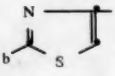
R″ is thienyl, furyl, cyclohexyl, 1,4-cyclohexadienyl, phenyl, or substituted phenyl substituted by C_1–C_3 alkyl, C_1–C_3 alkoxy, halogen, or hydroxy, and,

Q is protected-hydroxy, protected-amino, or protected-carboxy;

or R is an α-oximino group of the formula



wherein R‴ is R″ as defined above or the group of the formula



wherein

b is H, C_1–C_3 alkyl or protected NH_2;

Y is hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_2–C_4 alkenyl, benzyl, C_2–C_4 alkanoyl, phenylsulfonyl, or C_1–C_4 alkylsulfonyl;

R_o is hydrogen or methoxy;

R_1 is C_1–C_4 alkyl, 2,2,2-trichloroethyl, iodomethyl, diphenylmethyl, benzyl, substituted benzyl substituted by methyl, methoxy or nitro; or R_1 is a trialkylsilyl group of the formula

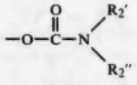
wherein

R_3, R_3', and R_3'' are independently C_1–C_3 alkyl;

or R_1 is sodium or potassium;

R_1' has the same meanings as R_1, provided that, when R_1 is sodium, potassium, diphenylmethyl, or p-methoxybenzyl, R_1' is

R_2 is C_1–C_4 alkanoyloxy or a carbamoyloxy group of the formula



wherein

R_2' and R_2'' are independently hydrogen or C_1–C_3 alkyl; and n is 0 or 1;

with the limitation that when n is 1, the double bond represented by the dotted bonding lines is in the 3-position.

4,266,050

1,2-DIHYDRO-4-HYDROXY-2-IMINO-N-SUBSTITUTED-3-QUINOLINECARBOXAMIDE DERIVATIVES

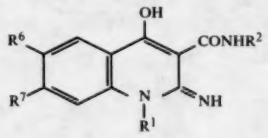
Arthur A. Santilli, Havertown, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jul. 2, 1980, Ser. No. 165,310

Int. Cl.³ C07D *215/14, 215/06, 413/12*

U.S. Cl. 544—128 **7 Claims**

1. A compound of the formula:



in which

R^1 is hydrogen or alkyl of one to six carbon atoms;

R^2 is hydrogen, alkyl of one to six carbon atoms, allyl, 2-hydroxyethyl,2-alkoxyethyl in which the alkoxy group has from one to six carbon atoms or 2-(4-morpholinyl-)ethyl;

R^6 is hydrogen, chlorine or bromine and

R^7 is hydrogen or, when R^6 is hydrogen, chlorine or bromine;

or a pharmaceutically acceptable salt thereof.

4,266,051

HEXAMETHYLENETETRAMINE MOLYBDATE

William J. Kroenke, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Division of Ser. No. 22,670, Mar. 22, 1979, which is a division of Ser. No. 792,293, Apr. 29, 1977, Pat. No. 4,153,729, which is a division of Ser. No. 770,168, Feb. 14, 1977, Pat. No. 4,053,455. This application Feb. 4, 1980, Ser. No. 118,152

Int. Cl.³ C07D *487/18*

U.S. Cl. 544—181 **1 Claim**

1. Hexamethylenetetramine molybdate.

4,266,052

PROCESS FOR PREPARING CYANURIC ACID

Mario G. R. T. de Cooker, and Anita G. W. G. Haemers, both of Geleen, Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation of Ser. No. 903,399, May 8, 1978, abandoned. This application Jan. 8, 1980, Ser. No. 110,500

Claims priority, application Netherlands, May 9, 1977, 7705049

Int. Cl.³ C07D *251/32*

U.S. Cl. 544—192 **6 Claims**

1. In a process for preparing cyanuric acid by heating at least one of urea and biuret in a suitable polar organic solvent, the improvement which comprises conducting the reaction at a temperature between about 170° C. and about 220° C. in the presence of a nitrate selected from an ammonium-, alkali metal-, alkaline- earth metal nitrate and mixtures thereof dissolved in the reaction medium, and wherein the amount of recycled cyanuric acid present in the reaction mixture does not exceed the amount soluble in said solvent at the reaction temperature.

4,266,053

MELAMINE GROUP-CONTAINING (METH)ACRYLATE

Yoshihiko Imanaka; Hiroshi Nakamatsu, both of Hino; Akihiro Horike, Musashino; Yoichi Saito, and Kaoru Iwata, both of Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

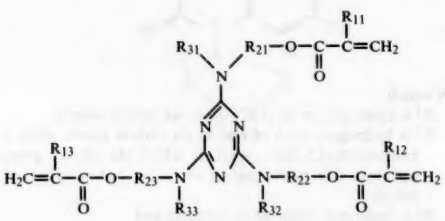
Filed Jun. 21, 1979, Ser. No. 50,893

Claims priority, application Japan, Jun. 21, 1978, 53/74117; Jul. 5, 1978, 53/80927; Aug. 14, 1978, 53/98218; Sep. 22, 1978, 53/115984

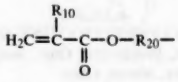
Int. Cl.[3] C07D *251/70, 251/64*

U.S. Cl. 544—196 **4 Claims**

1. A melamine group-containing (meth)acrylate of the following formula:



wherein R_{11}, R_{12} and R_{13} are each hydrogen atom or methyl group; R_{21}, R_{22} and R_{23} are each an alkylene group of from 2 to 10 carbon atoms, in which the number of carbon atoms in the main chain is 2 or more; and R_{31}, R_{32} and R_{33} are each hydrogen atom, an aliphatic, alicyclic or aromatic hydrocarbon group of from 1 to 10 carbon atoms, or a group of the following formula:



wherein R_{10} is hydrogen atom or methyl group; and R_{20} is an alkylene group of from 2 to 10 carbon atoms, in which the number of carbon atoms in the main chain is 2 or more.

4,266,054

N-SUBSTITUTED PERHYDRO-S-TRIAZINES

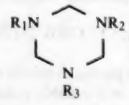
Andrew T. Au, Needham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 32,600, Apr. 23, 1979, abandoned. This application May 9, 1980, Ser. No. 148,302

Int. Cl.[3] C07D *251/04*

U.S. Cl. 544—215 **5 Claims**

1. A compound of the formula



wherein R_1, R_2, and R_3 are independently $(—A—)_nR_4$, where —A— is independently, each occurrence —CHRCHR'O— wherein R and R' are hydrogen or methyl, provided that at most only one of R or R' is methyl. R_4 is independently, each occurrence, $C_{1\text{-}40}$ alkyl, and n is independently, each occurrence, a number from 2 to about 40.

4,266,055

TRIS(3-ACETYLTHIOPROPYL)ISOCYANURATE AND PREPARATION THEREOF

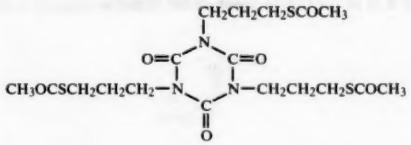
Yoshiharu Inoue, Osaka; Fumio Tanimoto, Kyoto, and Hisao Kitano, Osaka, all of Japan, assignors to Nippon Kasei Chemical Co., Ltd., Tokyo, Japan

Filed May 7, 1980, Ser. No. 147,522

Int. Cl.[3] C07D *251/34*

U.S. Cl. 544—221 **7 Claims**

1. Tris(3-acetylthiopropyl) isocyanurate represented by the following formula:



4,266,056

PHENYL URACILS

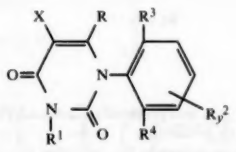
Clive A. Henrick; Jeffrey N. Labovitz, both of Palo Alto, Calif.; Roland T. V. Fox, Crowthrone, England; William G. Rathmell, Wokingham, England, and Margaret C. Shephard, Maidenhead, England, assignors to Zoecon Corporation, Palo Alto, Calif. and Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 894,307, Apr. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 892,560, Apr. 3, 1978, abandoned. This application Mar. 23, 1979, Ser. No. 23,517

Int. Cl.[3] C07D *239/54*

U.S. Cl. 544—311 **24 Claims**

1. A compound of the following formula A:



(A)

wherein,

each of R and R^1 is hydrogen, methyl or ethyl;

R^2 is lower alkyl, lower alkoxy, bromo, chloro, fluoro, lower haloalkyl, cyano, nitro, lower alkylthio, hydroxy, lower alkylcarbonyl, lower alkoxycarbonyl, lower haloalkoxy, cycloalkyl, cycloalkalkyl, lower haloalkylthio, lower alkenyl or lower alkynyl;

R^3 is hydrogen or independently selected from the values of R^2;

R^4 is hydrogen or independently selected from the values of R^2;

X is hydrogen, carbamoyl or cyano; and y is zero, one, two or three, and provided that:

(a) when X is cyano, R is hydrogen, R^1 is hydrogen, R^2 is bromo, and y is one—then either R^3 or R^4 is other than hydrogen;

(b) when R is hydrogen or methyl, y is zero and each of R^3 and R^4 is hydrogen—then either X or R^1 is other than hydrogen; and

(c) when X is cyano, R is hydrogen and R^1 is methyl—then either R^3 or R^4 is other than hydrogen, or y is one, two or three.

4,266,057

PROCESS FOR THE PREPARATION OF 2-ISOPROPYLAMINO PYRIMIDINE

Claude G. Demosthene, Aramon, and Christian R. Aspisi, Boulbon, both of France, assignors to Expansia, Paris, France

Filed Jun. 11, 1979, Ser. No. 47,477

Claims priority, application New Zealand, Jun. 16, 1978, 187595

Int. Cl.[3] C07D *239/42*

U.S. Cl. 544—330 1 Claim

1. A method for the preparation of 2-isopropylamino pyrimidine comprising reacting at room temperature 2-amino pyrimidine with a large excess of acetone in the presence of an organic carboxylic acid and an alkali metal borohydride.

4,266,058

SYNTHESIS OF 2-ISOPROPYLAMINO-PYRIMIDINE

Claude G. Demosthene, Aramon, and Christian R. Aspisi, Boulbon, both of France, assignors to Societe d'Etudes de Produits Chimiques, Paris, France

Filed Jun. 23, 1980, Ser. No. 162,114

Claims priority, application United Kingdom, Jul. 4, 1979, 23224/79

Int. Cl.[3] C07D *239/42*

U.S. Cl. 544—330 1 Claim

1. Process for the synthesis of 2-isopropylamino-pyrimidine by aminolysis consisting in refluxing stoichiometric proportions of isopropylamine and 2-methysulphonyl-pyrimidine in the absence of a solvent.

4,266,059

PROCESS FOR THE PREPARATION OF 2,4,5-TRICHLOROPYRIMIDINE

Fritz Döring, Odenthal; Gunther Beck, Leverkusen, and Gerhard Dankert, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 30, 1979, Ser. No. 99,126

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855660

Int. Cl.[3] C07D *239/30*

U.S. Cl. 544—334 9 Claims

1. Process for the preparation of 2,4,5-trichloropyrimidine, wherein 2-cyanoethyl isocyanide dichloride is reacted with hydrogen chloride and the product is then reacted with chlorine.

4,266,060

DIPYRIDO [4,3-b] [3,4-f] INDOLES AND PROCESS FOR OBTAINING THEM

Emile Bisagni, Orsay; Claire Ducrocq, Les Ulis; Christian Rivalle, Villebon; Pierre Tambourin, Orsay les Ulis; Francoise Wendling, Paris; Jean-Claude Chermann, Elancourt, and Luc Montagnier, Le Plessis-Robinson, all of France, assignors to Agence Nationale de Val orisation de la Recherche (ANVAR), Neuilly sur Seine, France

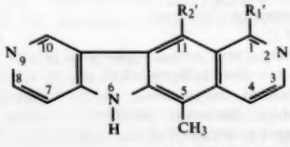
Filed Apr. 13, 1978, Ser. No. 896,101

Claims priority, application France, Apr. 13, 1977, 77 11148

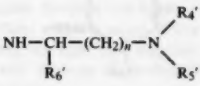
Int. Cl.[3] C07D *471/14;* A61K *31/47*

U.S. Cl. 546—64 16 Claims

1. A dipyrido [4,3-b] [3,4-f] indole of the formula



in which: R'_1 is hydrogen, hydroxy, lower alkyl, halogen or an amino group of the formula



wherein

n is an integer from 1 to 3,

R'_6 is hydrogen or lower alkyl,

R'_4 and R'_5 each independently is hydrogen or lower alkyl, and

R'_2 is hydrogen or lower alkyl,

or a pharmaceutically acceptable salt thereof.

8. A process for preparing a compound according to claim 1, comprising the steps of:

(1) reacting a 6-amino-isoquinoline with 3-nitro-4-chloropyridine to form the corresponding 6-[4'-(3'-nitropyridyl) amino] isoquinoline;

(2) hydrogenating said isoquinoline thus obtained into the corresponding amino compound;

(3) reacting the corresponding amino compound with sodium nitrite to form the corresponding triazolopyridine;

(4) converting the triazolopyridine thus obtained into the corresponding dipyrido [4,3-b] [3,4-f] indole, and

(5) optionally forming the pharmaceutically acceptable salt of the dipyrido indole thus obtained.

4,266,061

PROCESS FOR PREPARATION OF 2-VINYLPYRIDINE FROM ACETYLENE AND ACRYLONITRILE

Helmut Bönnemann, Essen, and Marc Samson, Hanau, both of Fed. Rep. of Germany, assignors to Studiengesellschaft Kohle mbH, Mulheim, Fed. Rep. of Germany

Filed Sep. 14, 1979, Ser. No. 75,458

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1978, 2840460

Int. Cl.[3] C07D *213/12*

U.S. Cl. 546—253 9 Claims

1. In a process for the catalytic, selective preparation of 2-vinylpyridine from acetylene and acrylonitrile employing a cyclopentadienylcobalt catalyst or π-allylcobalt catalyst at an elevated temperature in an inert solvent, the improvement wherein mol ratio of actylene to acrylonitrile is generally 0,5 to 2:1 and the reaction is carried out at a temperature of over 140° C. and up to 180° C., the reaction time being not more than 50 minutes.

4,266,062

(1-METHYL-2-PYRIDINYLIDENE) DERIVATIVES OF GUANIDINE

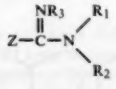
Chris R. Rasmussen, Ambler, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Sep. 18, 1978, Ser. No. 943,097

Int. Cl.[3] C07D *401/12*

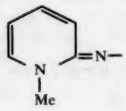
U.S. Cl. 546—281 2 Claims

1. A heterocyclic derivative of guanidine selected from the group consisting of a compound having the formula:



and the pharmaceutically acceptable acid addition salts thereof wherein:

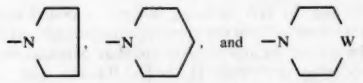
Z is



R_1 is a member selected from the group consisting of methyl and ethyl;

R_2 is a member selected from the group consisting of loweralkyl, cyclopentyl, cyclohexyl and benzyl;

taken together represents a member selected from the group consisting of:



wherein W is a member selected from the group consisting of O, S, N-loweralkyl and N-phenyl; and

R_3 is a member selected from the group consisting of:

alkyl having from 4 to 10 carbons;

phenyl; methylenedioxyphenyl; phenyl substituted with from 1 to 3 substituents each selected from the group consisting of halo, loweralkyl and loweralkoxy; and phenyl substituted with a member selected from the group consisting of hydroxy, benzyloxy, loweralkanoyloxy, nitro; trifluoromethyl and methylthio;

naphthyl; cyclopentyl; cyclohexyl; exo-2-norbornyl; endo-2-norbornyl; 1-adamantyl;

arylalkyl in which the aryl function is phenyl and the alkyl function has from 1 to 4 carbons; and diphenylalkyl in which the alkyl function has from 1 to 2 carbons.

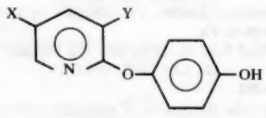
4,266,063

PROCESS FOR PREPARING SUBSTITUTED PYRIDINYLOXY ETHER INTERMEDIATE

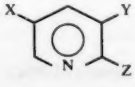
John C. Budzinski, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 17, 1979, Ser. No. 104,452
Int. Cl.[3] C07D *213/64*
U.S. Cl. 546—302 **8 Claims**

1. A process for preparing a compound of the formula



which consisting essentially of heating a substituted pyridine of the formula



wherein X is CF_3 or Cl, Y is H, Cl, or Br and Z is Cl or Br, provided that when X is Cl, Y is Cl or Br, and when X is CF_3, Y is H,

with hydroquinone in the absence of a base at a temperature in the range of about 100°–220° C. in the presence or absence of a solvent.

4,266,064

PROCESS FOR PRODUCING CHLORO β-TRIFLUOROMETHYLPYRIDINES

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Moriyama; Isao Yokomichi, Moriyama; Yasuhiro Tsujii, Moriyama, and Shigeyuki Nishimura, Shiga, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Mar. 5, 1980, Ser. No. 127,468
Int. Cl.[3] C07D *213/26*
U.S. Cl. 546—345 **5 Claims**

1. A process for producing a chloroβ-trifluoromethylpyridine selected from the group consisting of 2-chloro-3-trifluoromethylpyridine, 2-chloro-5-trifluoromethylpyridine and 2, 6-dichloro-3-trifluoromethylpyridine which comprises reacting a chloroβ-trichloromethylpyridine selected from the group consisting of 2-chloro-3-trichloromethylpyridine, 2-chloro-5-trichloromethylpyridine and 2, 6-dichloro-3-trichloromethylpyridine with hydrogen fluoride in the presence of a catalyst of a fluoride of at least one metal selected from the group consisting of chromium, iron, nickel, manganese, cobalt and aluminum and diluent in a vapor phase at a temperature of 300° to 500° C. for a residence time of 1 to 60 seconds.

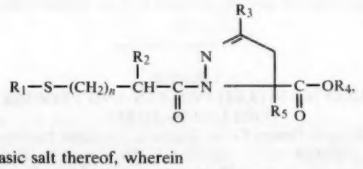
4,266,065

MERCAPTOACYLDIHYDROPYRAZOLE CARBOXYLIC ACID DERIVATIVES

George C. Rovnyak, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 14, 1980, Ser. No. 140,355
Int. Cl.[3] C07D *231/06*
U.S. Cl. 548—379 **8 Claims**

1. A compound having the formula



or a basic salt thereof, wherein

R_1 is hydrogen, alkyl, aryl, arylalkyl or

wherein R_6 is alkyl or aryl;

R_2 is hydrogen, alkyl, trifluoromethyl or pentafluoroethyl;

R_3 is hydrogen or alkyl;

R_4 is hydrogen, alkyl or arylalkyl;

R_5 is hydrogen or alkyl; and

n is 0, 1 or 2;

wherein the term "aryl" refers to phenyl or phenyl substituted with one, two or three halogen, alkyl, alkoxy, alkanoyl, nitro, amino, alkylamino, dialkylamino, trifluoromethyl, cyano or carboxyl groups; the terms "alkyl" and "alkoxy" refer to groups having 1 to 8 carbon atoms; and the term "alkanoyl" refers to groups having 2 to 9 carbon atoms.

4,266,066

PROCESS FOR THE MANUFACTURE OF KETONES

Werner Spielmann, Kelkheim, and Georg Schaeffer, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 26, 1979, Ser. No. 97,792
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1978, 2851371; Oct. 12, 1979, 2941391
Int. Cl.³ C07D 333/16, 307/12; C07C 45/00
U.S. Cl. 549—64 26 Claims

1. A process for the manufacture of a ketone, which comprises reacting a carboxylic acid halide with an Al-alkyl or alkyl-Al-halide, in methylene chloride as solvent, at a temperature of from about 30° to about 60° C., and decomposing the resulting ketone complex with water.

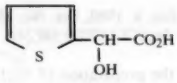
4,266,067

PROCESS FOR PREPARING THIOPHENE DERIVATIVES

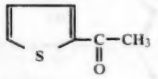
Tamotsu Fujisawa; Kiyoshi Kondo, and Kunikazu Sakai, all of Yamato, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Continuation of Ser. No. 886,639, Mar. 15, 1978, abandoned. This application Jan. 7, 1980, Ser. No. 110,331
Claims priority, application Japan, Mar. 18, 1977, 52-29175; Mar. 18, 1977, 52-29176; Mar. 18, 1977, 52-56427
Int. Cl.³ C07D 333/24
U.S. Cl. 549—79 10 Claims

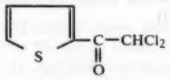
1. A process for the preparation of 2-thiopheneglycolic acid of the formula:



which comprises reacting 2-acetylthiophene of the formula



with chlorine in glacial acetic acid to produce a 2-(dichloroacetyl)thiophene of the formula



and reacting said 2-(dichloroacetyl)thiophene with an alkali or an alkaline earth metal hydroxide to produce 2-thiopheneglycolic acid.

4,266,068

PREPARATION OF 1,2-TETRAMETHYLDICHLORO-DISILANE FROM HEXAMETHYLDISILANE AND METHYLCHLORODISILANE

Ronald J. Allain, Naperville, Ill., and Joseph P. Maniscalco, Sugar Land, Tex., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 28, 1980, Ser. No. 172,606
Int. Cl.³ C07F 7/08
U.S. Cl. 556—430 3 Claims

1. In the process of producing tetramethyldichlorodisilane (TMDDS) by Lewis acid catalyzed redistribution of hexamethyldisilane (HMDS) and a crude mixture of methylchlorodisilane which produces a mixed redistribution product, the improvement which comprises distilling the mixed redistribution product under conditions whereby there is produced a light ends distillate, a middle distillate and heavy bottoms, recovering the middle distillate which is about 95% pure TMDDS by weight and recycling the light ends distillate and heavy bottoms with the crude mixture of methylchlorodisilanes for continued redistribution.

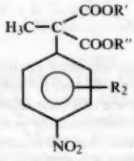
4,266,069

PROCESSES FOR THE PREPARATION OF HYDRATROPIC ACIDS AND ESTERS

Jerry A. Walker, Oshtemo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

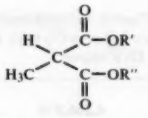
Filed Dec. 19, 1979, Ser. No. 105,063
Int. Cl.³ C07C 79/46
U.S. Cl. 560—20 12 Claims

1. A process for the preparation of a compound selected from the group consisting of

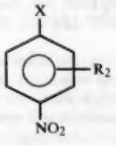


III

wherein R_2 is selected from the group consisting of hydrogen, halogen, alkoxy of from 1 to 6 carbon atoms, inclusive, alkoxy carbonyl of from 1 to 6 carbons, inclusive, alkyl of from 1 to 6 carbons, inclusive, cycloalkyl of from 4 to 7 carbons, inclusive, phenyl, cyano and nitro; and R′ and R″ may be the same or different and are alkyl of from 1 to 6 carbons, or R′ and R″ taken together to form a cyclic diester; which comprises reacting a compound having the formula



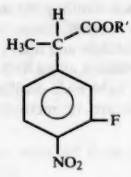
wherein R′ and R″ are defined as above; with a compound selected from the group consisting of



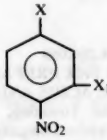
II

wherein X is a halogen and R_2 is defined as above; in the presence of a base selected from the group consisting of alkali metal hydroxide or potassium carbonate in an aprotic polar solvent such that the reaction mixture is essentially free of water.

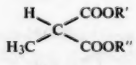
5. A process for the preparation of a compound having the formula


III'a

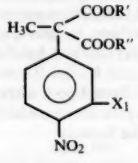
wherein R' is alkyl of from 1 to 6 carbons, which comprises (1) reacting a compound having the formula


II$_1$

wherein X and X, may be the same or different and are halogen with the proviso that X, is not fluorine with a compound of formula



wherein R' and R'' may be the same or different and are alkyl of from 1 to 6 carbons or are R' and R'' taken together to form a cylic diester in the presence of a base selected from the group consisting of alkali metal hydroxide or potassium carbonate in an aprotic polar solvent such that the reaction mixture is essentially free of water to obtain a compound having the formula


III$_1$

wherein X, R' and R'' are as defined above and (2) reacting the compound III, prepared in step (1) with a alkali metal fluoride to obtain compound III'a above.

4,266,070

CATALYTIC PROCESS FOR THE MANUFACTURE OF URETHANES

David Moy, Ridgewood, N.J., assignor to Halcon Research and Development Corp., New York, N.Y.

Filed May 25, 1979, Ser. No. 42,676
Int. Cl.[3] **C07C** *125/063, 125/07*
U.S. Cl. 560—24 **15 Claims**

1. A process for producing urethanes which comprises contacting a reactant consisting essentially of an organic primary or secondary amine selected from the group consisting of aliphatic amines, alicyclic amines and aromatic amines having the formula

(i) RNH_2,
(ii) $RNH(R')$, or
(iii) $R(NH_2)_m$

wherein R and R' are independently selected from a group consisting of alkyl, aryl, alkaryl, aralkyl, and cycloalkyl and wherein m is an integer of from 2 to 5, and substituted derivatives of the above groups wherein the substituent is inert and is alkyl, aryl, alkaryl, aralkyl, cycloalkyl, halogen, alkylcyano, tertiary amino, ether or thioether, and amino-substituted derivatives of the foregoing hydrocarbyl substituents, said amine being free of substitution by OH—, >C=O and sulfonic acid groups, in a reaction zone in the substantial absence of reactive oxygen and in the substantial absence of —NO and —NO_2 moieties, under substantially anhydrous conditions, and at elevated temperature and pressure, with (1) a source of carbon monoxide and (2) an organic compound containing at least one hydroxyl group and consisting essentially of at least one member selected from the group consisting of compounds of the formula $Z(OH)_n$ wherein n is an integer of at least one and Z is an optionally substituted aliphatic, cycloaliphatic or araliphatic group, in the presence of (3) an effective amount of catalyst consisting essentially of a member selected from the group consisting of carbonyls of a metal selected from the group consisting of Co, Mo, Ti, Ni, Fe, Rh and mixtures thereof, said catalyst calculated as the metal, being present in an amount of at least about 0.001 weight percent of the amine reactant charged to the reaction zone.

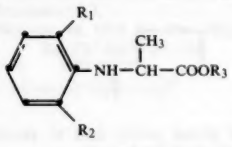
4,266,071

PROCESS FOR THE PREPARATION OF N-(1-ALKOXYCARBONYLETHYL)-2,6-DIALKYLANILINES

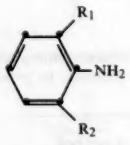
Alfred Grieder, Böckten, and Klaus-Jürgen Coers, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 9, 1980, Ser. No. 157,760
Int. Cl.[3] **C07C** *101/44*
U.S. Cl. 560—43 **14 Claims**

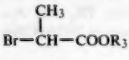
1. A process for the preparation of N-(1'-alkoxycarbonylethyl)-2,6-dialkylanilines of the formula I


(I)

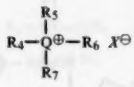
in which R_1 and R_2 are each methyl or ethyl and R_3 is an alkyl group having 1–4 carbon atoms, by reacting a 2,6-dialkylaniline of the formula II


(II)

in which R_1 and R_2 are as defined above, with an alkyl 2-bromopropionate of the formula III


(III)

in which R_3 is as defined above, which comprises carrying out the reaction of the 2,6-dialkylaniline of the formula II with the alkyl 2-bromopropionate of the formula III at 110°–125° C., in excess 2,6-dialkylaniline as the solvent, in the presence of a quaternary compound of the formula IV



(IV)

in which Q is nitrogen or phosphorus, the radicals R_4, R_5, R_6 and R_7 are each an alkyl radical having 1 to 16 carbon atoms, or phenyl, and one of the radicals R_4, R_5, R_6 and R_7 can also be benzyl, and, if Q is nitrogen, Q together with three of the radicals R_4, R_5, R_6 and R_7 can also be a pyridine radical, whilst the fourth radical is alkyl having 1–16 carbon atoms, phenyl or benzyl, and $X^{\ominus}$ is a halide anion or a bisulfate anion, and in the presence of an alkali metal carbonate or alkali metal bicarbonate as an acid acceptor, the water formed being separated off by distillation during the reaction and the organic phase obtained after the addition of water and separation of the phases being worked up by distillation.

4,266,072

11-DEOXY-INTER-PHENYLENE-19-OXO-PGF$_1$ COMPOUNDS

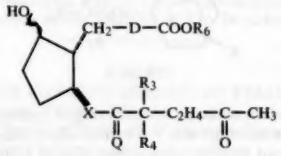
John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 25,879, Apr. 2, 1979, Pat. No. 4,228,104. This application Mar. 20, 1980, Ser. No. 131,998

Int. Cl.^{3} C07C *177/00*

U.S. Cl. 560—53 **4 Claims**

1. A compound of the formula



wherein D is

(1) —(m-Ph)—$(CH_2)_2$—, or

(2) —(m-Ph)—O—CH_2—,

wherein —(m-Ph)— is inter-meta-phenylene;

wherein Q is α-OH:β-R_5 or α-R_5:β-OH, wherein R_5 is hydrogen or methyl;

wherein R_6 is

(a) hydrogen,

(b) alkyl of one to 12 carbon atoms, inclusive,

(c) cycloalkyl of 3 to 10 carbon atoms, inclusive,

(d) aralkyl of 7 to 12 carbon atoms, inclusive,

(e) phenyl,

(f) phenyl substituted with one, 2, or 3 chloro or alkyl groups of one to 3 carbon atoms, inclusive,

(g) —(p-Ph)—CO—CH_3,

(h) —(p-Ph)—NH—CO—(p-Ph)—NH—CO—CH_3,

(i) —(p-Ph)—NH—CO—(p-Ph),

(j) —(p-Ph)—NH—CO—CH_3,

(k) —(p-Ph)—NH—CO—NH_2,

(l) —(p-Ph)—CH=N—NH—CO—NH_2,

(m) β—naphthyl,

(n) —CH_2—CO—R_{28},

wherein (p-Ph) is para-phenyl or inter-para-phenylene,

wherein R_{28} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl, or

(o) a pharmacologically acceptable cation;

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; and

wherein X is cis- or trans-CH=CH—.

4,266,073

FLUORINATED AROMATIC POLYENES

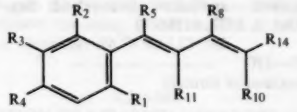
Ka-Kong Chan, Hopatcong, and Beverly A. Pawson, Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 37,798, May 10, 1979, Pat. No. 4,201,727, which is a division of Ser. No. 952,416, Oct. 18, 1978, Pat. No. 4,169,100, which is a division of Ser. No. 809,738, Jun. 24, 1977, Pat. No. 4,137,246, which is a continuation-in-part of Ser. No. 722,939, Sep. 13, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,028, Nov. 14, 1975, abandoned. This application Nov. 21, 1979, Ser. No. 96,362

Int. Cl.^{3} C07C *69/76, 59/00*

U.S. Cl. 560—55 **11 Claims**

1. A compound represented by the formula



wherein R_1, R_2 and R_3 are lower alkyl, R_4 is lower alkoxy, R_8 is methyl or trifluoromethyl, R_5, R_{10} and R_{11} are hydrogen of fluorine and R_{14} is formyl, hydroxymethyl, alkoxymethyl, dialkoxymethyl, carboxyl, alkoxycarbonyl, alkenoxycarbonyl or alkynoxy carbonyl with the proviso that when R_8 is methyl one of R_5, R_{10} and R_{11} is fluorine.

4,266,074

NOVEL INSECTICIDAL COMPOSITION

Keimei Fujimoto, Kobe; Nobuo Ohno, Toyonaka; Yoshitoshi Okuno, Toyonaka; Toshio Mizutani, Toyonaka; Isao Ohno, Minoo; Masachika Hirano, Toyonaka; Nobushige Itaya, Ikeda, and Takashi Matsuo, Amagasaki, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan

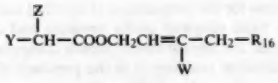
Division of Ser. No. 378,301, Jul. 11, 1973, Pat. No. 3,996,244. This application Jul. 16, 1975, Ser. No. 596,332

Claims priority, application Japan, Jul. 11, 1972, 47-69805

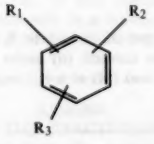
Int. Cl.^{3} C07C *69/76, 79/46, 149/40, 147/107, 143/67;* A01N *43/16, 41/02, 37/34*

U.S. Cl. 560—105 **3 Claims**

1. A substituted acetate compound of the formula



wherein Y is



in which R_1 and R_2 are individually hydrogen, halogen, cyano, nitro, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkoxyalkyl, halogen-substituted lower alkyl, halogen-substituted lower alkenyl, halogen-substituted lower alkynyl, lower alkylthio, lower alkylsulfoxyl, acyl, acyloxy, lower alkoxycarbonyl, lower alkenyloxycarbonyl, lower alkynyloxycarbonyl, methylenedioxy, tetramethylene or trimethylene and R_3 is each of the above except for methylenedioxy, tetramethylene and trimethylene, respectively;

Z is straight or branched lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, cyano, halogen-substituted lower

alkyl, halogen-substituted lower alkenyl or an alicyclic group having 3 to 7 carbon atoms;
W is methyl or halogen; and
R_{16} is phenyl.

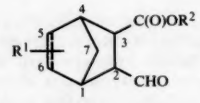
4,266,075

BICYCLIC ALDEHYDE DERIVATIVES, THEIR USE AS PERFUMING AND FLAVORING INGREDIENTS AND PROCESS FOR THEIR PREPARATION

Ferdinand Näf, Geneva, and Rene Decorzant, Onex, both of Switzerland, assignors to Firmenich, S.A., Geneva, Switzerland

Division of Ser. No. 940,836, Sep. 8, 1978, Pat. No. 4,218,347. This application Nov. 19, 1979, Ser. No. 95,201
Claims priority, application Switzerland, Sep. 15, 1977, 78234/77; Oct. 3, 1977, 11281/77
Int. Cl.³ C07C *69/74*
U.S. Cl. 560—120 **3 Claims**

1. A compound of formula



(I)

containing a single or a double bond in the position indicated by the dotted lines and wherein symbol R^1 represents a hydrogen atom or a methyl radical and R^2 defines a linear or branched alkyl radical containing 1 to 6 carbon atoms, with the proviso however that R^1 cannot represent hydrogen when R^2 represents a methyl radical.

4,266,076

PREPARATION OF ETHYL CARBOXYLATE

Max Gruffaz, La Mulatiere, and Odile Micaelli, Lyons, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Jan. 16, 1979, Ser. No. 3,815
Claims priority, application France, Jan. 16, 1978, 78 01571
Int. Cl.³ C07C *67/04*
U.S. Cl. 560—247 **6 Claims**

1. In a process for the preparation of an ethyl carboxylate, in liquid phase, from ethylene under pressure and at least one carboxylic acid, the improvement which comprises conducting the esterification reaction (i) in the presence of a catalytic amount of a member selected from the group consisting of a perfluoroalkanesulfonic acid having the structural formula:

$$C_nF_{2n+1}SO_3H$$

wherein n is an integer of from 1 to 8, a lower alkyl ester thereof, and mixtures thereof; (ii) under a pressure of from about 20 to 60 bars; and (iii) at a temperature of from about 100° to 200° C.

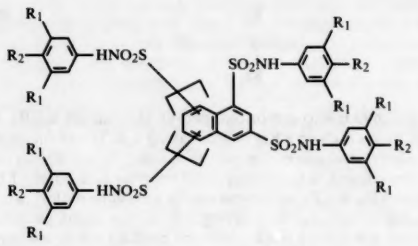
4,266,077

NAPHTHALENETETRAYLTETRAKIS(SULFONYLIMINO)-ARYL MULTICARBOXYLIC ACIDS AND SALTS THEREOF

Ransom B. Conrow, Pearl River, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1979, Ser. No. 106,610
Int. Cl.³ C07C *143/75*
U.S. Cl. 562—427 **7 Claims**

1. A compound of the formula:



wherein R_1 is $COOR_3$; wherein R_3 is selected from the group consisting of hydrogen and a pharmaceutically acceptable salt cation; and R_2 is selected from the group consisting of hydrogen and $COOR_3$.

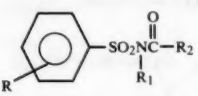
4,266,078

N-ACYLSULFONAMIDE HERBICIDAL ANTIDOTES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Apr. 20, 1979, Ser. No. 31,906
Int. Cl.³ C07C *143/78*
U.S. Cl. 564—91 **7 Claims**

1. A compound of the formula



in which
R is selected from the group consisting of hydrogen, methyl, chloro, acetamido, and 1–4 carbon alkoxyamido;
R_1 is selected from the group consisting of hydrogen, allyl, and metal ion;
R_2 is selected from the group consisting of 1–10 carbon alkyl and 1–4 carbon haloalkyl.

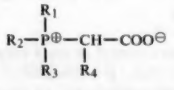
4,266,079

PROCESS FOR PREPARING TETRAHYDROCARBYLPHOSPHONIUM BICARBONATE SALTS

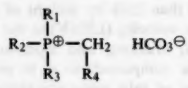
George A. Doorakian, Bedford; Lawrence G. Duquette, Maynard, and John F. Arnett, Newton, all of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 5, 1979, Ser. No. 91,280
Int. Cl.³ C07F *9/54*
U.S. Cl. 568—11 **12 Claims**

1. A process for preparing a tetrahydrocarbylphosphonium bicarbonate salt comprising reacting (a) a trihydrocarbyl(hydrocarbylcarboxymethyl)phosphonium hydroxide inner salt represented by the formula



in which R_1–R_3 are each independently hydrocarbyl or inertly-substituted hydrocarbyl radicals having from 1 to 20 carbon atoms, and R_4 is phenoxy, phenyl, hydrogen or an alkyl having 1 to 20 carbon atoms with (b) water, so as to prepare a phosphonium bicarbonate salt represented by the formula



4,266,080
PERFLUOROALKYLTHIOETHYL ETHER DERIVATIVES

Robert A. Falk, New City, and Karl F. Mueller, New York, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,714
Int. Cl.³ C07C *149/18, 149/36*
U.S. Cl. 568—45 **8 Claims**

1. A perfluoroalkylthioethylether of the formula

$$R_fR_1SCH_2CH_2OTZ$$

wherein

R_f is straight or branched chain perfluoroalkyl of 1 to 18 carbon atoms, or said perfluoroalkyl substituted by perfluoroalkoxy of 2 to 6 carbon atoms;

R_1 is straight or branched chain alkylene of 1 to 12 carbon atoms, alkylenethioalkylene of 2 to 12 carbon atoms, alkyleneoxyalkylene of 2 to 12 carbon atoms, or alkyleneiminoalkylene of 2 to 12 carbon atoms where the imino nitrogen atom contains as a third substituent hydrogen or alkyl of 1 to 6 carbon atoms;

T is straight or branched chain alkylene of 1 to 18 carbon atoms or phenylene; and

Z is —H or —OR_2

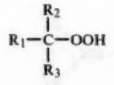
where R_2 is hydrogen, alkyl of 1 to 24 carbon atoms, alkanoyl of 2 to 24 carbon atoms, alkenoyl of 3 to 24 carbon atoms.

4,266,081
PROCESS FOR PREPARATION OF PEROXIDES

Kenichi Mizuno, Ohtake; Hiroshi Iwasaki, Yamoguchi, and Hirohiko Nambu, Ohtake, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

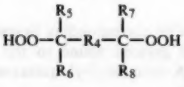
Filed Sep. 21, 1978, Ser. No. 944,271
Claims priority, application Japan, Sep. 29, 1977, 52/116028
Int. Cl.³ C07C *179/093, 179/06*
U.S. Cl. 568—578 **14 Claims**

1. A process for the preparation of peroxides by condensation reaction at a temperature of 30° to 100° C. of a tertiary organic hydroperoxide represented by the following formula:



(1)

or



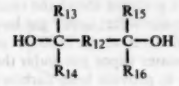
(2)

wherein R_1, R_2, R_6 and R_8 each stand for an aliphatic alicyclic or aromatic monovalent hydrocarbon group having 1 to 13 carbon atoms, R_3, R_5 and R_7 each stand for an aliphatic monovalent hydrocarbon group having 1 to 5 carbon atoms and R_4 stands for an aliphatic, alicyclic or aromatic divalent hydrocarbon group with a teritary alcohol represented by the following formula:

(3)

-continued

or



(4)

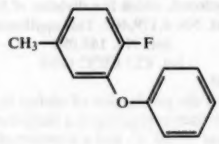
wherein R_9, R_{10}, R_{13} and R_{15} each stand for an aliphatic, alicyclic or aromatic monovalent hydrocarbon group having 1 to 13 carbon atoms, R_{11}, R_{14} and R_{16} each stand for an aliphatic monovalent hydrocarbon group having 1 to 5 carbon atoms, and R_{12} stands for an aliphatic divalent hydrocarbon group having 1 to 2 carbon atoms or an aromatic divalent hydrocarbon group having 6 to 10 carbon atoms, said process being characterized in that zinc chloride is present as a catalyst in an amount of 2 to 100% by weight based on the tertiary alcohol, wherein the zinc chloride is present in the form of an aqueous solution containing from 1 to 4 moles of water per mole of zinc chloride.

4,266,082
PREPARATION OF 4-FLUORO-3-PHENOXY-TOLUENE

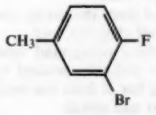
Reimer Cöllin; Hans-Joachim Diehr, both of Wuppertal, and Uwe Friesnitz, Unna-Massen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1979, Ser. No. 67,649
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837525
Int. Cl.³ C07C *41/01*
U.S. Cl. 568—639 **14 Claims**

1. A process for the preparation of 4-fluoro-3-phenoxy-toluene of the formula



comprising reacting 3-bromo-4-fluoro-toluene, of the formula



with potassium phenolate, or with sodium phenolate in the presence of a potassium salt, in a diluent in the presence of copper as catalyst at a temperature between about 120° and 180° C.

4,266,083
BIOMASS LIQUEFACTION PROCESS

Max W. Huang, Birmingham, Ala., assignor to The Rust Engineering Company, Birmingham, Ala.

Filed Jun. 8, 1979, Ser. No. 46,907
Int. Cl.³ C10G *1/06*
U.S. Cl. 585—240 **10 Claims**

1. In a process for the conversion of solid materials selected from the group consisting of cellulosic biomass materials and lignite to oil wherein a solids-oil slurry is contacted in a reactor with carbon monoxide and water vapor in the presence of a catalyst selected from the group consisting of alkali metal and alkaline earth metal carbonates, bicarbonates and formates at a temperature of from about 250° C. to about 450° C. and at a

pressure of from 2000 psig to about 5000 psig the improvement wherein off-gases from the reactor and hydrocarbon fuel are burned with oxygen at a pressure above the reactor pressure to provide a carbon monoxide-water vapor gas having a temperature of from about 1100° C. to about 1600° C. and introducing said carbon monoxide-water vapor gas under the surface of the oil slurry in the reactor to provide heat, carbon monoxide, and water vapor to said reactor.

4,266,084

NON-CATALYTIC PYROLYSIS OF RESIDUES FROM AROMATIC CARBOXYLIC ACID MANUFACTURE

John K. Allen, St. Charles, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Oct. 19, 1979, Ser. No. 86,403
Int. Cl.³ C07C *1/20*
U.S. Cl. 585—469 **6 Claims**

1. A method of decarbonylating and/or decarboxylating a mixture containing aldehydo-, carboxy-, methylol-, keto- and carboxy-, methylol-carboxy-, and carboxy- and aldehydo-substituted benzene and toluene which comprises heating such mixture in the absence of an externally added catalyst to a temperature of at least 700° C. whereat there is formed a solid carbonaceous product and a hydrocarbon product including vapors of benzene and toluene together with lower alkanes and alkenes, hydrogen and oxides of carbon; and collecting at least vapors of benzene and toluene.

4,266,085

OLEFIN DISPROPORTIONATION PROCESS

Leo Kim, Modesto, Calif.; Timm E. Paxson, Houston, and Sunny C. Tang, Katy, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 66,352, Aug. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 54,775, Jul. 5, 1979, abandoned, which is a division of Ser. No. 861,916, Dec. 19, 1977, Pat. No. 4,179,403. This application May 9, 1980, Ser. No. 148,099
Int. Cl.³ C07C *6/00*
U.S. Cl. 585—645 **13 Claims**

1. A process for the production of olefins by disproportionation which comprises contacting at a temperature of between about −20° C. and +150° C. and a pressure of between about 0 and 2000 psig an olefinic hydrocarbon feedstock capable of undergoing a disproportionation process with an activator and a catalyst comprising:

(a) an ion exchange resin;

(b) a metal selected from the group consisting of molybdenum, tungsten and rhenium; and

(c) an organic linking compound which has at least one moiety which is ionically bonded to said ion exchange resin and further has at least one moiety which is coordinately bonded to said metal.

4,266,086

PROCESS FOR REMOVING α-ACETYLENES FROM DIOLEFINS

Pradeep V. Patel, Parma, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Feb. 12, 1980, Ser. No. 120,948
Int. Cl.³ C07C *7/177*
U.S. Cl. 585—810 **10 Claims**

1. A process for removing alpha-acetylenes from a hydrocarbon liquid mixture comprising said alpha-acetylenes and a conjugated diolefin having four to five carbon atoms, which process comprises, (a) adding an inhibitor to said mixture in an amount sufficient to inhibit polymerization of said diolefin, (b) introducing said hydrocarbon liquid mixture and inhibitor, optionally with an inert diluent, to a fixed bed reactor without supplying hydrogen or oxygen thereto, (c) contacting said mixture at a temperature in the range from about 200° F. to about 260° F. with a solid porous supported catalyst selected from the group consisting essentially of supported cupric oxide, silver oxide, or mixtures thereof in the range from more than 10% but less than 25% by weight of said catalyst, at a liquid hourly space volocity (LHSV) in the range from about 1 to about 50, (d) cracking said alpha-acetylenes to non-oxygenated organic compounds so as to produce at least 90 percent conversion of said alpha-acetylenes in the effluent from said reactor, in which effluent cyclopentadiene, if present in the feed, is essentially unconverted, loss of diolefin is less than 1 percent by weight of the hydrocarbon feed, and (e) providing heat to said reactor so as to maintain said temperature range during said process.

4,266,087

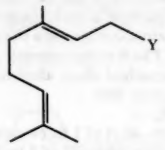
PROCESS FOR PREPARING A MYRCENOL, CIS-OCIMENOL MIXTURE SUBSTANTIALLY FREE OF TRANS-OCIMENOL

Alan J. Chalk, Kinnelon, and Steven A. Magennis, Wayne, both of N.J., assignors to Givaudan Corporation, Clifton, N.J.

Filed Nov. 13, 1978, Ser. No. 960,152
Int. Cl.³ C07C *29/44, 29/88, 29/00, 33/02*
U.S. Cl. 568—875 **25 Claims**

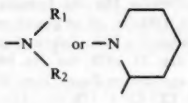
1. A process for the preparation of a myrcenol, cis-ocimenol mixture, substantially free of trans-ocimenol, which comprises:

(a) preparing a geranyl amine of the formula:



wherein:

Y represents

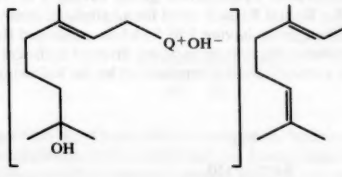


and R_1 and R_2 are alike or different and are chosen from the group consisting of ethyl, n-propyl and n-butyl;

by reacting myrcene with 2-methylpiperidine or a secondary dialiphatic amine of the formula:

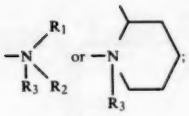
in the presence of its corresponding lithium amide;

(b) converting said geranyl amine to the corresponding E-3,7-dimethyl-2,6,-octadien-1-yl quaternary ammonium salt of the formula



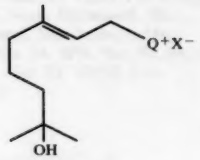
wherein:

X is Cl, Br, I or R_3SO_4;
Q represents

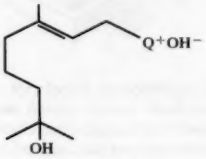


and R_3 is an alkyl group of one to eight carbons or a benzyl group;

(c) converting said quaternary ammonium salt to the corresponding E-3,7-dimethyl-7-hydroxy-2-octen-1-yl quaternary ammonium salt



(d) converting said salt to the corresponding E-3,7-dimethyl-7-hydroxy-2-octen-1-yl quaternary ammonium hydroxide



and

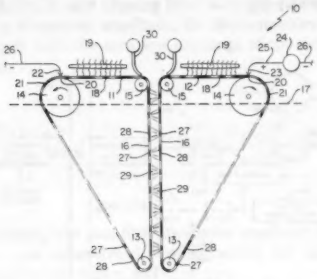
(e) subjecting said E-3,7-dimethyl-7-hydroxy-2-octen-1-yl quaternary ammonium hydroxide to Hofmann elimination conditions.

4,266,088

METHOD OF MAKING ELECTRET MEANS

James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Division of Ser. No. 894,827, Apr. 10, 1978, Pat. No. 4,174,979.
This application Jun. 21, 1979, Ser. No. 50,796
Int. Cl.[3] H01L 35/00; B03C 5/00
U.S. Cl. 136—206 9 Claims



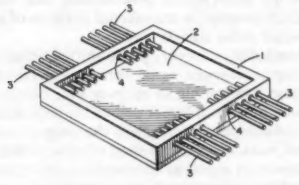
1. A method of making electret means comprising the steps of providing a strip of electret producing material, and changing said strip of material into a strip of electret means, said changing step comprising the step of forming at least one side of said strip of electret means with a repeating serial pattern of a narrow band of electret means transversely across said strip of material and then a wide band of electret means transversely across said strip of material that is spaced from said narrow band of electret means whereby said strip of electret means has each pair of adjacent narrow bands of electret means thereof separated by a wide band of electret means thereof disposed therebetween and spaced therefrom, said forming step comprising the step of causing said bands of said electret means to all have a negative charge or all have a positive charge at said one side of said strip of material.

4,266,089

ALL METAL FLAT PACKAGE HAVING EXCELLENT HEAT TRANSFER CHARACTERISTICS

Jeremy D. Scherer, S. Dartmouth, Mass., assignor to Isotronics, Incorporated, New Bedford, Mass.

Filed Sep. 14, 1978, Ser. No. 942,329
Int. Cl.[3] H05K 5/04
U.S. Cl. 174—52 FP 6 Claims



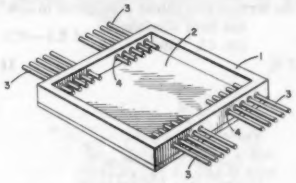
3. A flat package for electric microcircuits comprising:
(a) a type 316 stainless steel frame having electrical leads extending therethrough, said leads being glass-sealed therein:
(b) a flat copper bottom;
(c) said stainless steel frame forming the side walls of the package and being brazed to said copper bottom to form a continuous seal between said frame and said bottom; and
(d) said brazing have been accomplished after the electrical leads were glass-sealed in said frame and at a temperature below about 460° C.

4,266,090

ALL METAL FLAT PACKAGE

Jeremy D. Scherer, South Dartmouth, Mass., assignor to Isotronics, Incorporated, New Bedford, Mass.

Filed Sep. 14, 1978, Ser. No. 942,334
Int. Cl.[3] H05K 5/04
U.S. Cl. 174—52 FP 7 Claims



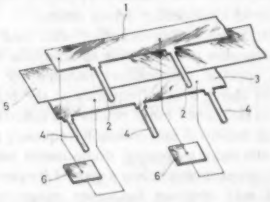
4. A flat package for electric microcircuits comprising:
(a) a Kovar frame having electric leads extending therethrough, said leads being glass-sealed therein;
(b) a molybdenum bottom, said molybdenum bottom having a sintered plating at least in the area in contact with said Kovar frame;
(c) said Kovar frame forming the side walls of the package and being brazed to said molybdenum bottom to form a continuous seal between said frame and said bottom; and
(d) said brazing having been accomplished after the electrical leads were glass-sealed in said frame at and a temperature below about 500° C.

4,266,091

LAYER-BUILT LAMINATED BUS EMBEDDING CONDENSERS

Sunichi Fukuda, Kukizaki, Japan, assignor to Rogers Corporation, Rogers, Conn.

Filed Oct. 10, 1978, Ser. No. 950,266
Claims priority, application Japan, Oct. 8, 1977, 52-121168
Int. Cl.[3] H01B 7/00
U.S. Cl. 174—72 B 11 Claims



1. A multi-conductor bus bar assembly comprising:
a first bus conductor, said first conductor being formed from an elongated flat strip of conductive material;
at least a second bus conductor, said second conductor being formed from an elongated flat strip of conductive material;
a layer of insulating material bonded to and separating said conductors, said insulating material being provided with a series of longitudinally spaced cut-outs;
a plurality of capacitors, said capacitors being individually positioned in said cut-outs in said layer of insulating material, said capacitors each comprising a flat wafer of solid dielectric material with plates defined by conductive material disposed on the sides of the wafer which face said conductors; and
means for electrically and mechanically connecting the plates of said capacitors to said conductors.

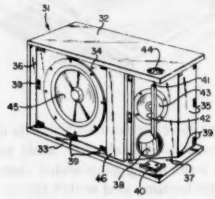
4,266,092
LOUDSPEAKER SYSTEM WITH BROAD IMAGE SOURCE

Charles R. Barker, III, Harvard, Mass., assignor to Bose Products, Inc., Toa Baja, P.R.

Continuation of Ser. No. 762,017, Jan. 24, 1977, Pat. No. 4,133,975, which is a continuation of Ser. No. 564,543, Apr. 2, 1975, abandoned. This application Nov. 2, 1978, Ser. No. 957,423 The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.[3] H04R *1/28*

U.S. Cl. 179—1 E **11 Claims**



1. A loudspeaker system comprising,

cabinet means for supporting loudspeaker drivers,

first loudspeaker driver means supported by said cabinet for radiating sound energy to the front over a first frequency range and having a first polar response,

second loudspeaker driver means supported by said cabinet for radiating sound energy over a second frequency range mostly higher than said first frequency range to the front and side for reflection first from a reflecting surface and then into the listening area along a path after a single reflection that intersects the first loudspeaker driver means axis at a point in said listening area and having a directional second polar response different from said first polar response,

the angle between the axes of said first and second loudspeaker driver means being an acute angle.

an input terminal pair,

and means for intercoupling said input terminal pair and said first and second loudspeaker driver means for providing spectral components in a common frequency range to said first and second loudspeaker driver means,

said means for inercoupling coacting with said first and second loudspeaker driver means to comprise means for attenuating spectral components radiated by said first driver means above a first frequency at the high end of said common frequency range relative to spectral components applied thereto in said common frequency range and means for attenuating spectral components radiated by said second driver means below a second frequency at the low end of said common frequency range relative to spectral components applied thereto in said common frequency range so that the difference between the gain from said input terminal pair to the output of said first driver means and the gain from said input terminal pair to the output of said second driver means is substantially uniform over said common frequency range,

said means for intercoupling coacting with said first and second loudspeaker driver means to comprise means for dissimilarly radiating from first and second locations defined by said first and second loudspeaker driver means respectively spectral components over said over said common frequency range to provide a spatially diffuse source,

said common frequency range being at least half an octave,

said loudspeaker system being free of other loudspeaker driver means which radiate energy having spectral components above said first frequency range primarily directly into the listening area.

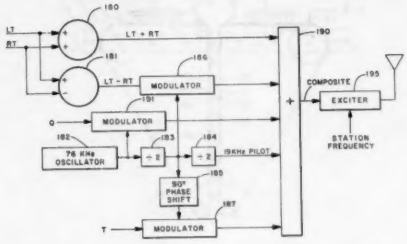
4,266,093
COMPATIBLE FOUR CHANNEL RADIO BROADCAST AND RECEIVING SYSTEM

Benjamin B. Bauer, Stamford, Conn., assignor to CBS Inc., New York, N.Y.

Filed Mar. 9, 1979, Ser. No. 18,967

Int. Cl.[3] H04S *3/02;* **H04H** *5/00*

U.S. Cl. 179—1 GQ **17 Claims**



6. Apparatus for receiving, from first and second channels, first and second composite signals representing the sum and difference, respectively, of signals designated LT and RT, and a first auxiliary composite signal, the said signals being derived from four directional audio signals designated LF, RF, LB and RB, and the LT signal containing, to the extent they are present, LF in a dominant proportion and LB and RB in sub-dominant proportions, LB and RB being phase-shifted with respect to each other, the RT signal containing, to the extent they are present, RF in a dominant proportion and LB and RB in sub-dominant proportions, LB and RB being phase-shifted with respect to each other and respectively lagging and leading LB and RB in the LT signal by substantially 90° , and the first auxiliary composite signal containing, to the extent they are present, equal proportions of LF, RF, LB and RB of lesser value than the sub-dominant proportions of LB and RB in the first and second composite signals, which have phase angles either all substantially perpendicular or all substantially parallel to those of corresponding signals in a composite signal representing the sum of LT and RT, the apparatus including a decoder comprising:

means responsive to the primary and secondary channels for processing the sum and difference signals to obtain the LT and RT signals;

matrix means for combining the LT and RT signals in predetermined amplitude and phase relationship to obtain four intermediate signals, each of which has a different one of the individual audio signals predominant and contains in sub-dominant proportion transferred portions of others of the individual audio signals; and

means for combining relatively phase-shifted versions of the first auxiliary composite signal with the intermediate signals in phase relationship to recover four output signals, each of which has a different one of the individual audio signals predominant and wherein the proportions of the transferred portions are diminished relative to their associated predominant signal as compared to the relative proportions of the predominant and transferred portions in the intermediate signals.

4,266,094
ELECTRONIC SPEECH PROCESSING SYSTEM

Irving J. Abend, 17 Clinton Park Dr., Bergenfield, N.J. 07621

Filed Mar. 15, 1979, Ser. No. 20,820

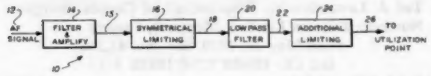
Int. Cl.[3] H04B *1/10, 15/00*

U.S. Cl. 179—1 D **7 Claims**

1. A system for processing speech signals to enable undistorted signal amplification while providing high articulation and intelligibility in a predetermined band of frequencies, comprising:

(a) means for filtering an AF electrical signal analog of said speech signal, to provide an output AF signal, including a narrow passed band of frequencies primarily in the range of from about 1000 to 2500 Hz;

(b) means for symmetrically clipping the output from said filtering means, the signal level of said output being such in relation to said clipping level as to provide a series of pulses of constant amplitude, the discontinuities of which coincide with the zero axis crossings of the original AF signal;



(c) reshaping low pass filter means for receiving the output from said symmetrical clipping means for sinusoidally reshaping said pulses; and

(d) secondary limiting means for receiving the reshaped output of said low pass filter means, for clipping discontinuities generated by the low pass filter means from said output; and

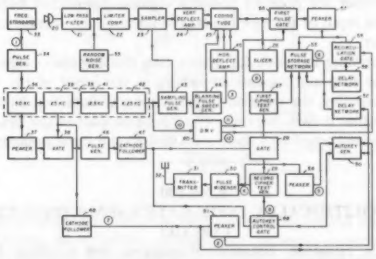
each of means (a), (b), (c) and (d) being consecutively disposed in a single signal channel which is free of branch circuits for modifying the input signal presented to a said means.

4,266,095

BINARY CODE RANDOMIZING SYSTEM

Beryl L. McArdle, 1935 Brighton-Henrietta Town Line Rd., Rochester, N.Y. 14618

Filed Jan. 4, 1950, Ser. No. 136,739
Int. Cl.[3] H04K *1/00*
U.S. Cl. 179—1.5 R **10 Claims**



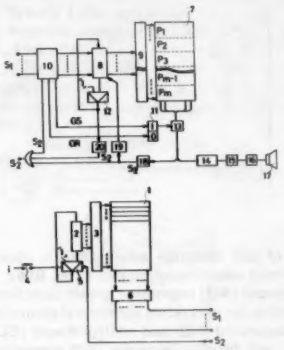
1. In a secret communication system including a source of an intelligence signal wave, means for periodically sampling said signal wave at predetermined intervals, and means for developing from the samples thus obtained a first pulse train comprising groups each having n binary digits: means for developing a second pulse train comprising groups of n binary digits, (n − 1) of said binary digits corresponding respectively with a selected binary digit in each of the preceding (n−1) groups of said first pulse train; means for combining said first and second pulse trains to develop a third pulse train; and means for utilizing said third pulse train.

4,266,096

AUDIBLE OUTPUT DEVICE FOR TALKING TIMEPIECES, TALKING CALCULATORS AND THE LIKE

Tomohiro Inoue, and Sigeaki Masuzawa, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 28, 1979, Ser. No. 98,064
Claims priority, application Japan, Nov. 30, 1978, 53-148940
Int. Cl.[3] G10L *1/00*
U.S. Cl. 179—1.5 M **4 Claims**



1. An audible output device comprising:

a store means for storing linguistic information codes indicative of words to be audibly displayed;

a first control means for fetching the linguistic information codes in preselected order from the store means;

an audible output means responsive to the first control means for deliverying audible words in accordance with the linguistic information codes fetched from the store means;

a second control means operatively associated with a pause code for allowing the pause code to be stored within the store means together with the linguistic information codes and fetching the linguistic information codes and the pause code from the store means in the preselected order of the words to be audibly displayed and the audible output pause time slots;

and an audible output inhibition means responsive to the pause code from the store means for disabling the audible output means for a desired length of time.

4,266,097

DEVICE CONTROL SYSTEM

Thomas B. Cannon, Thornton; James E. Dalley, Brighton, both of Colo., and Andrew S. George, Ocean Township, Monmouth County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 14, 1979, Ser. No. 38,408
Int. Cl.[3] H04M *11/00*
U.S. Cl. 179—2 A **8 Claims**

1. A control system for overriding the normal control of devices (L00–Ln) each of which is located at one of a plurality of sites, each of said sites having associated with it a communication pair (T00, R00–Tn, Rn), the system comprising:

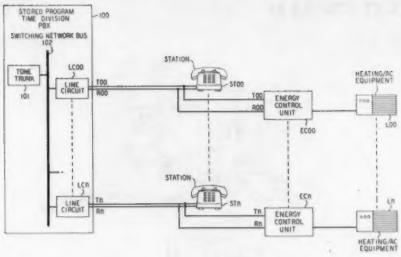
generation means (**101**) for producing an audio frequency tone having a predetermined frequency;

distribution means (**100**) connected to both said communication pairs (T00, R00–Tn, Rn) and said generation means (**101**) for concurrently applying said audio frequency tone to each of said communication pairs (T00, R00–Tn, Rn) associated with a site containing one of said devices (L00–Ln) the normal control of which is to be overridden;

a plurality of control means (EC00–ECn), each of which is

connected to one of said communication pairs (T00, R00–Tn, Rn), associated on a one-to-one basis with said devices (L00–Ln), for overriding the normal control of said devices (L00–Ln) wherein each said control means (EC00–ECn) includes:

detection means (200) for providing an indication of the presence of said applied audio frequency tone signal on said associated communication pair (T00, R00), wherein



each of said detection means (200) is connected to said associated communication pair (T00, R00);

switch means (303) responsive to said detection means (200) indication for overriding the normal control of said device L00 associated with said control means (EC00); and

wherein said distribution means (100) comprises a telephone communication system which is responsive to an algorithm stored therein for overriding the normal control of said devices (L00–Ln).

4,266,098

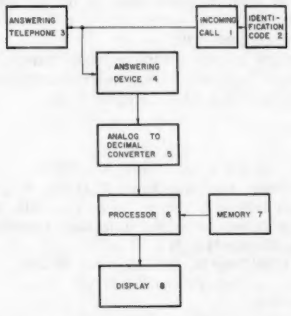
DEVICE TO AUTOMATICALLY SCREEN INCOMING TELEPHONE CALLS, DETERMINE THE IDENTITY OF THE CALLER AND PROCESS THE CALL ACCORDINGLY

Albert P. Novak, 96 Cypress St., Floral Park, N.Y. 11001

Filed Nov. 3, 1978, Ser. No. 957,344

Int. Cl.[3] **H04M** *15/06*

U.S. Cl. 179—5.5 **9 Claims**



1. A system for the automatic identification of telephone callers for use in a conventional telephone system comprising:

an incoming signal; an identification code contained within said incoming signal, a unique code having been assigned to each caller; a receiving telephone station, including call-alerting means; automatic call-answering means for receiving at said telephone station said incoming signal and establishing an interconnection with an identification processing means for processing said identification code to determine the identity of the caller, said identification means comprising: signal sampling/conversion means for receiving said identification code and converting the information contained within said code into date bits representing digital words;

display means coupled to said identification means for displaying the identity of the caller, driven by the digital word output of said identification means, and arranged to produce at a single annunciator the identity of each identified caller, at the time said identification code is received.

4,266,099

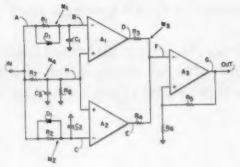
PULSE REJECTION AND DURATION CORRECTION CIRCUIT

Inanc Kayalioglu, Ottawa; Vincent G. Roman, Stittsville, and Ted J. Lewandowski, Arnprior, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 29, 1979, Ser. No. 43,348

Int. Cl.[3] **H04M** *1/74;* **H03K** *5/13*

U.S. Cl. 179—16 EA **3 Claims**



1. A pulse rejection circuit comprising:

a circuit input and a circuit output;

first, second and third switching amplifiers, each having an input and an output;

a first coupling network having a direct coupled output for positive polarity signals and an integrated coupled output for negative polarity signals, connected between the input of the circuit and the input of the first amplifier;

a second coupling network having a direct coupled output for negative polarity signals and and integrated coupled output for positive polarity signals, connected between the input of the circuit and the input of the second amplifier;

a summing network for connecting the summed outputs of the first and second amplifiers to the input of the third amplifier, the third amplifier having a switching hystersis so that it switches only when both outputs of the first and second amplifiers have switched to the same polarity.

4,266,100

MONOLITHICALLY INTEGRATED SEMICONDUCTOR CIRCUIT

Dietrich Höppner, Blaustein-Wippingen, and Gerhard Kohlbacher, Ulm, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 21,973

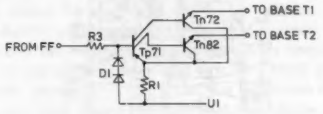
Claims priority, application Fed. Rep. of Germany, Mar. 17, 1978, 2811631

Int. Cl.[3] **H01L** *29/70;* **H04Q** *3/52*

U.S. Cl. 179—18 GF **2 Claims**

1. A monolithically integrated semiconductor circuit having a plurality of low resistance through switching transistors in accordance with bipolar technology for use in coupling arrangements having symmetrical cross points for telephone

connection and transmission devices, which permits a series of incoming lines to be selectively connected to one or more outgoing lines in which the two through switching transistors respectively of a symmetrical cross point are constructed as NPN transistors and can be switched through in a high resistance manner by means of a composite circuit and can be blocked in low resistance manner by means of an additional circuit, and the composite circuit and the additional circuit can be triggered by means of a memory constructed as a trigger stage, characterized in that the composite circuit has a double



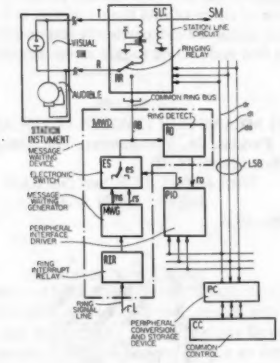
collector transistor of PNP type, a collector of which is connected to the base of a first NPN transistor, the other collector being connected to the base of a second NPN transistor, its emitter being connected, on the one hand, to the collectors of both NPN transistors and on the other hand via a first resistor to a voltage source and its base being connected, on the one hand, via a component causing a constant drop in voltage to said voltage source and, on the other hand, via a second resistor to the trigger stage and the emitters of the two NPN transistors respectively are connected to the bases of the two through switching transistors.

4,266,101

CONTROL CIRCUIT FOR A TELEPHONE SYSTEM FOR THE CONTROL OF VISUAL AND AUDIBLE SIGNALS

Ronald C. Dunbar, Wyncote, Pa., assignor to Siemens Corporation, Cherry Hill, N.J.

Filed Jul. 18, 1979, Ser. No. 58,679
Int. Cl.³ H04M *3/02*
U.S. Cl. 179—84 C **9 Claims**



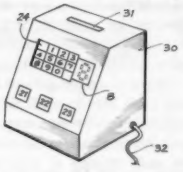
1. In a telephone system having a common control unit for the making of telephone connections between calling and called subscriber stations, each of said subscriber stations having telephones with visual and audible signalling devices, a plurality of individual line circuits assigned to the subscriber stations and connecting means assigned to each line circuit for connecting a signal thereto from a common ring bus, the combination comprising: a peripheral conversion and storage device connected to said common control unit, a peripheral interface driver connected by a data and address bus to said peripheral conversion and storage device, a generator connected to said common ring bus for producing a ringing signal and a visual control signal, and an electronic switch connected between said generator and said common ring bus and controllable by said peripheral interface drive for alternately connecting to said common ring bus said ringing signal for operating said audible signalling devices and said visual control signal for operating said visual signalling devices to identify a message waiting condition, a ring detector connected to said electronic switch and to said peripheral interface driver for monitoring the control of said electronic switch.

4,266,102

AUTOMATIC DIALING DEVICE

Louis Stanley, Beverly Hills, and Robert E. Sinclair, Summer Hill, both of Australia, assignors to Card-O-Matic Pty. Limited, Sydney, Australia

Continuation of Ser. No. 899,190, Apr. 24, 1978, abandoned. This application Nov. 8, 1979, Ser. No. 92,408
Claims priority, application Australia, Apr. 22, 1977, PC9846; Dec. 2, 1977, PD 2641
Int. Cl.³ H04M *1/278*
U.S. Cl. 179—90 CS **7 Claims**



1. An automatic telephone dialing apparatus comprising card reading means to serially read each digit of an encoded telephone number from an elongated business card, credit card, or similar flat object, said card having a width between a minimum and a maximum predetermined dimension, a variable length of at least a predetermined minimum dimension, and a minimum stiffness insufficient to prevent transverse buckling of said card under longitudinal stress, a card entered memory connected to said card reading means to sequentially receive therefrom at a ramdon rate, and store, each said digit, and a dial pulse generating circuit connected to said memory to generate at a predetermined rate a telephone dialing pulse train in accordance with the numerical value of each of the digits stored in said memory, wherein each said digit is encoded on said card as one or more holes therein, each located at a corresponding spaced location along a line transverse to the longitudinal axis of said card, the location of said holes representing the numerical value of each said digit and being at predetermined distances from one edge of said card, said minimum predetermined card width being directly determined by the maximum number of holes used to encode any digit and the spacing of said holes, the spacing between said lines being random along the length of the card starting from a first end of the card with no line being more than the minimum predetermined card length dimension from said first end;

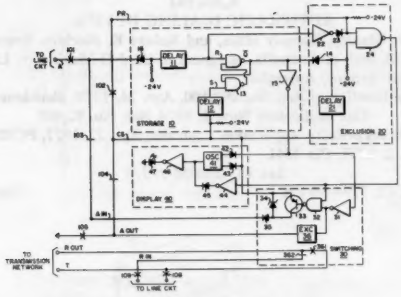
said card reading means comprising a plurality of spaced light sources, and a corresponding plurality of light sensitive devices in a slot, each of said light sensitive devices being arranged to receive light from the corresponding light source, said card being manually insertable, said first end first, in said slot at any random or variable speed between said light sources and said light sensitive devices, the spacing of said light sources and said light sensitive devices permitting light to be received by said devices only via said holes in said card, and

wherein said maximum predetermined card width is determined by the width of said slot and said minimum predetermined card length is determined by the depth of said slot.

4,266,103
KEY TELEPHONE EXCLUSION CIRCUIT

Thomas E. White, Glen Ellyn, Ill., assignor to GTE Automatic Electric Laboratories Inc., Northlake, Ill.

Filed Jul. 26, 1979, Ser. No. 60,937
Int. Cl.[3] H04M *1/70*
U.S. Cl. 179—99 E 9 Claims



1. An exclusion circuit for use in a key telephone system including a plurality of key telephones, a common status lead and a telephone line, each of said telephones connectable to said status lead and said telephone line, each of said telephones operable to apply busy and idle signals to said status lead, and each of said telephones including a hold key and an exclusion release key, said exclusion circuit comprising:

storage means operated in response to connection to said status lead and application of said busy signal to said status lead, to generate a busy detected signal, said storage means further operated in response to connection to said status lead and application of said idle signal to said status lead, to generate an idle detected signal;

switching means connected to said storage means operated in response to said busy detected signal to prevent connection to said telephone line, said switching means further operated in response to said idle detected signal to apply said busy signal to said status lead;

exclusion means connected to said exclusion release key, and to said hold key via said storage means, said storage means further operated in response to operation of said hold key to generate an exclusion release enable signal, said exclusion means operated in response to momentary operation of said exclusion key, and further operated in response to momentary presence of said exclusion release enable signal, to generate said exclusion release signal, said exclusion means further operated in response to a busy signal to inhibit said exclusion release signal;

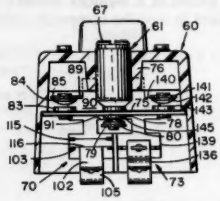
said switching means further connected to said exclusion means, operated in response to said exclusion release signal, to remove said busy signal from said status lead and to apply said idle signal to said status lead; and

display means connected to said storage means and said exclusion means, operated in response to said busy detected signal to generate a periodic visual signal, further operated in response to said exclusion release signal to generate a steady visual signal, further operated in response to said idle detected signal to extinguish said periodic visual signal, and further operated in response to an absence of said exclusion release signal to extinguish said steady visual signal.

4,266,104
SWITCH MECHANISM WITH INDEPENDENT TOGGLE ACTUATORS

Denis Capel, Hardegarijp, Netherlands, assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Feb. 12, 1979, Ser. No. 11,209
Int. Cl.[3] H01H *5/00*
U.S. Cl. 200—18 10 Claims

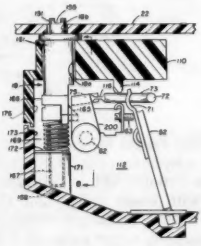


8. A switch responsive to at least first and second displacement actuators comprising a non-conductive base; a contact bar assembly mounted to said base and including at least first, second and third fixed contacts; first, second and third movable contact means associated respectively with said first, second and third fixed contacts; each of said movable contact means being movable between a normal position and an actuated position; first and second toggle means each having first and second stable states responsive to said first and second displacement actuators respectively for independently moving from said first state to said second state; first link means responsive to said first toggle means for actuating said first and second movable contact means when said first toggle means is actuated to said second state; and second link means independently movable relative to said first link means responsive to said second toggle means for actuating said second and third movable contact means to their respective actuated positions when said second toggle means is actuated to said second state; whereby said second movable contact means is responsive to the actuation of either of said toggle means, and said first and third contact means are independently responsive to the actuation of said first and second toggle means respectively.

4,266,105
BIASING MEANS FOR COMBINATION ACTUATOR

Norman P. Perkins, Jr., Westminster, Md., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jan. 15, 1979, Ser. No. 3,134
Int. Cl.[3] H01H *9/20*
U.S. Cl. 200—50 A 8 Claims



1. A multipole switching device including a set of cooperating contacts for each pole of said device, an operating mechanism for normally opening and closing said contacts, automatic trip means for operating said mechanism to open said contacts upon the occurrence of predetermined overload conditions; said mechanism including latch means which when latched

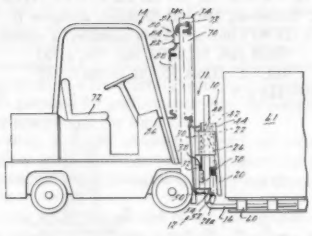
permits said mechanism to open and close said contacts; said latch means when unlatched releasing a portion of said mechanism to open said contacts; said automatic trip means including a common trip means for all poles of said device; a housing wherein said contacts, said mechanism and said trip means are disposed; said housing including an openable front cover; a trip actuator; a spring urging said actuator forward; said actuator being maintained by said cover in a first position when the latter is closed; with said cover open said spring operating said actuator forward to a second position; said actuator in moving from said first to said second position operatively engaging said trip means for operation thereof to unlatch said latch means whereby said mechanism opens said contacts; with said cover closed, said actuator being accessible for operation from outside of said housing from said first to a third position to operatively engage said trip means for operation thereof to unlatch said latch means whereby said mechanism open said contacts; said actuator being provided with a first formation that operatively engages the trip means to unlatch the latch means when the actuator moves from said first to said second position; said actuator being provided with a second formation which operatively engages the trip means to unlatch the latch means when the actuator is operated to said third position; and said spring urging said actuator rotationally toward said first position.

4,266,106

LIFT TRUCK LOAD POSITION SENSING DEVICE

Daniel M. Fraser, W. Bloomfield; John E. Hausner, Grosse Pte. Farms; William J. Hawkins, Plymouth, and Frederick K. Comiskey, Troy, all of Mich., assignors to The Stroh Brewery Co., Detroit, Mich.

Filed Apr. 5, 1979, Ser. No. 27,235
Int. Cl.³ H01H *3/16*
U.S. Cl. 200—61.44 **8 Claims**



1. In combination with a load carrier having vertical support means and horizontal load-carrying means extending forwardly from and substantially perpendicularly from said vertical support means, a position sensing device to determine the position of a load with respect to said load carrier, comprising

a plate, mounted pivotally onto said vertical support means of said load carrier and movable toward and away from said vertical support means in the direction in which said horizontal load-carrying means extends;

spring means biasing said plate away from said vertical support means;

position sensing means to detect first and second positions of said plate relative to said vertical support means,

wherein said first position detects a load contacting said plate, and said second position detects that said load is located too closely to said vertical support means; and

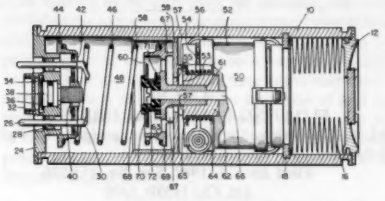
means to indicate said first and second positions from said position sensing means to an operator of said load carrier.

4,266,107

ACCELERATION SWITCH

Joseph P. Abbin, Jr.; John N. Middleton, and Harold E. Schildknecht, all of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 20, 1979, Ser. No. 67,858
Int. Cl.³ H01H *35/14*
U.S. Cl. 200—61.53 **8 Claims**



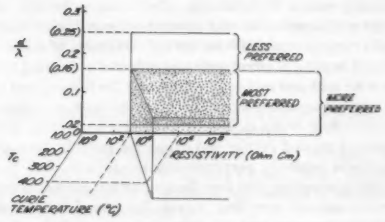
1. An acceleration sensitive switch comprising a generally tubular housing forming a chamber; a damping fluid within said chamber; an electrical contact within said chamber; a carriage assembly longitudinally moveable within said chamber including an inertial sensing mass and a piston having valve means for controlling the flow of said fluid past said piston, said valve means being open only when the acceleration of said switch is less than a second predetermined level and closed only when the acceleration is greater than said level; and spring means for biasing said carriage assembly away from said contact when the acceleration of said switch is zero, the force of said carriage assembly overcoming the bias of said spring when the acceleration of said switch exceeds a first predetermined level, the second level being greater than the first level.

4,266,108

MICROWAVE HEATING DEVICE AND METHOD

George R. Anderson, Minneapolis, Minn.; Walter R. Ott, Middlesex; Edward J. Smoke, Edison, both of N.J.; Ross A. Easter, Minneapolis, and Jeffrey J. Sholl, New Brighton, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.

Filed Mar. 28, 1979, Ser. No. 24,758
Int. Cl.³ H05B *6/64*
U.S. Cl. 219—10.55 E **50 Claims**



1. A device for use in a microwave radiation environment which device will absorb microwave radiation to produce heat and elevate the temperature of the device, said device including:

a microwave reflective member; and

a lossy magnetic ferrite containing material of a type having a Curie temperature, said ferrite being in heat transfer relationship with a surface of said member with said ferrite containing material having thickness (d) in a direction generally normal to said surface such that at the Curie temperature the ferrite containing material will reflect at

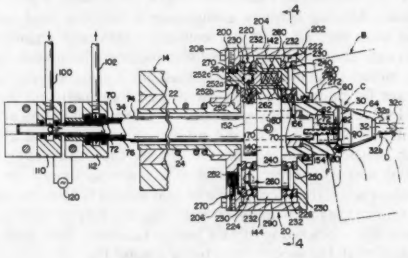
least about 65% of the impinging microwave radiation in the frequency range of about 300 MHZ to about 10^5 MHZ, said ferrite containing material having a volume resistivity (R) in ohm cm of greater than about a value where Log R=(Tc/100)+2 (where Tc=the Curie temperature in °C. of the ferrite material) at room temperature.

4,266,109

FLOATING VALVE SEAT INDUCTOR

John T. Ciolkevich, Richfield, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Jan. 21, 1980, Ser. No. 113,586
Int. Cl.³ H05B *5/00*
U.S. Cl. 219—10.57 **13 Claims**



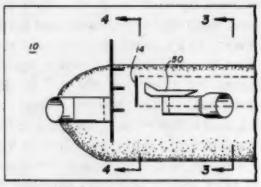
1. In an apparatus for inductively heating a generally conical valve seat formed concentrically around a central bore in an engine component, said apparatus including a selectively movable element adapted to be moved along an axis between an extended heating position and a retracted loading position and an inductor assembly, said inductor assembly including a carrier, an inductor having a shape generally matching said seat and mounted onto said carrier, an aligning nose member extending from said carrier parallel to said axis and generally concentric with said inductor, means for supporting said inductor assembly on said movable element, said mounting means including means for allowing only radial movement of said carrier with respect to said movable element when said nose member enters into said bore during movement of said element into said heating position with said inductor in heating relationship with said seat and centering means for biasing said carrier into a preselected radial position, the improvement comprising: said mounting means including first and second flange portions supported on said carrier and extending radially outwardly in a direction generally perpendicular to said axis, first coupling means for coupling said first flange portion onto said movable element, second coupling means for coupling said second flange portion onto said movable element, said first and second coupling means being generally diametrically opposed with respect to said axis, said radial movement allowing means including means in said coupling means for allowing only radial movement of said flange portions with respect to said movable element, said movable element having a first dimension in a first direction transverse to both of said coupling means and a second dimension in a second direction generally orthogonal to said first direction and extending between said coupling means, said first dimension being substantially less than said second dimension; and said centering means includes a centering structure at each of said flange portions.

4,266,110

CLAD WELDING ON AN INCLINED SURFACE

John J. Barger, Ringgold, Ga., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 13, 1978, Ser. No. 968,936
Int. Cl.³ B23K *9/04*
U.S. Cl. 219—73.21 **4 Claims**



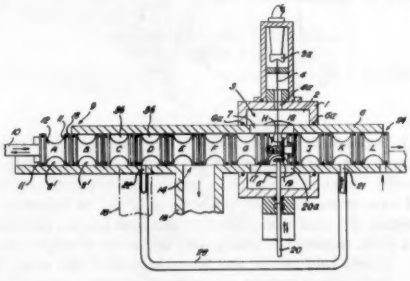
1. An apparatus for clad welding on a workpiece having a surface inclined to the horizontal transverse to the direction of welding progress, by depositing a weld layer having a width greater than the depth, comprising: an electrode; means for moving the electrode and the workpiece relative to one another; means for creating an electric arc between the electrode and the workpiece to deposit weld metal, whereby a zone of molten metal is formed on the trailing side of said electrode; a first means for depositing flux at the leading side of said electrode; a second means for depositing flux at the trailing side of said electrode; and a baffle located on the trailing side of said electrode, sufficiently close to said electrode so as to be over the zone of molten metal during operation, said baffle shaped to urge flux traveling on said workpiece over the uphill side of the weld deposit, in a downhill direction, whereby a heavier burden is placed on the downhill side of the zone of molten metal.

4,266,111

APPARATUS FOR TRANSFERRING WORK THROUGH A REGION OF REDUCED PRESSURE FOR THE PERFORMANCE OF AN OPERATION THEREON

Richard E. Trillwood, Histon, England, assignor to Wentgate Engineers (1976) Limited, Cambridgeshire, England

Filed Jan. 11, 1979, Ser. No. 2,753
Int. Cl.³ B23K *15/00;* **B65G** *65/30*
U.S. Cl. 219—121 EN **33 Claims**



1. An apparatus for transferring workpieces through a region of reduced pressure for the performance of an operation thereon, said apparatus comprising

a sealed chamber;

first pressure reducing means for reducing the pressure within the sealed chamber below atmospheric pressure;

means defining a passageway extending through the sealed chamber and having an input end;

a plurality of workholders each shaped for insertion into the

input end of said passageway for movement therealong, each end of each workholder including an annular portion disposed for sealing engagement with the wall of the passageway when the workholder is located therein, so that when the workholders are disposed end to end in said passageway they define a series of compartments within the passageway which move therealong as the workholders are moved along the passageway, the workholders including means for supporting a workpiece within each compartment;

means in the part of the passageway located within the sealed chamber defining an opening for permitting the interior of a compartment, as it reaches an operating station in the passageway adjacent said opening, to be exposed to the interior of the sealed chamber for the performance of an operation on a workpiece supported in said compartment;

means located adjacent said input end of the passageway for pushing the workholders along the passageway;

second pressure reducing means for reducing the pressure in each compartment in turn to a level between atmospheric pressure and the reduced pressure in the sealed chamber as the workholders are moved along the passageway towards said operating station, said second pressure reducing means including a port in communication with the interior of said passageway through the wall of said passageway, said port being located upstream of said sealed chamber with regard to the direction of movement of the workholders along said passageway, the dimension along the passageway of said port being greater than the dimension along the passageway between the forward edge, with regard to the direction of movement of the workholders along said passageway, of said annular portion of the rearward end of one workholder and the rearward edge of the said annular portion of the adjacent forward end of the workholder which immediately succeeds said one workholder in the passageway and the spacing of said port from said operating station being such that, while one compartment downstream of said port is disposed at said operating station adjacent said opening for the performance of an operation on a workpiece supported therein, the rearward annular end portion of a workholder upstream of said operating station and the adjacent forward annular end portion of the immediately succeeding workholder are both disposed adjacent the port between the upstream and downstream limits of said port.

30. A method of transferring workpieces through a region of reduced pressure for performance of an operation thereon, the method comprising the steps of

providing a sealed chamber having an interior pressure below atmospheric pressure, an operating station in the chamber, and a passageway extending through the chamber;

inserting into an input end of the passageway a plurality of workholders with an annular end portion of each of the workholders disposed in sealing engagement with the wall of the passageway and with the workholders arranged in end-to-end relationship to define a series of compartments within the passageway which move therealong as the workholders are moved along the passageway with the workholders supporting a workpiece within each compartment;

pushing the workholders and thereby the workpieces along the passageway;

providing a port in the wall of the passageway upstream of the sealed chamber, the port being coupled to a pressure reducing device;

sequentially reducing the pressure in each compartment to a level between atmospheric pressure and the reduced pressure in the sealed chamber as the workholders are moved along the passageway toward the operating station past the port;

exposing the interior of each compartment, in turn, to the interior of the sealed chamber through an opening in that part of the passageway which is located within the sealed chamber for the performance of an operation on the workpiece supported in the compartment as it reaches the operating station;

the dimension of said port in the longitudinal direction of said passageway being greater than the dimension along the passageway between the forward edge of said annular portion at the rearward end of the workholder and the rearward edge of the said annular portion of the adjacent forward end of the next following workholder,

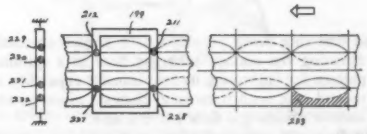
and the spacing of the port from the operating station being such that the exposing of the compartment downstream of said port at said operating station by said opening for the performance of an operation on a workpiece supported therein takes place at the same time as the rearward annular end portion of a workholder upstream of said operating station and the adjacent forward annular end portion of the immediately following workholder are both disposed adjacent the port between the upstream and downstream limits of said port.

4,266,112

WEB-CUTTING PROCESS

William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54301

Filed Feb. 14, 1979, Ser. No. 12,032
Int. Cl.³ B26F *3/14, 3/00*
U.S. Cl. 219—121 LN **19 Claims**



1. In a method of cutting shapes from a continuously moving web the steps of:

(A) providing a plurality of spaced apart web support means whereby said space defines a cutting zone;

(B) moving a web continuously across said cutting zone;

(C) mounting a plurality of impact type cutters on an overhead frame coincident with a line parallel to the web direction;

(D) moving said frame and plurality of cutters transversely of said web in a direction perpendicular to said web direction;

(E) whereby each of said cutters cuts a co-linear portion of the web from only alternate product shapes in a co-linear series of consecutive product shapes.

4,266,113

DISMOUNTABLE INDUCTIVELY-COUPLED PLASMA TORCH APPARATUS

Medona B. Denton, Tucson, Ariz.; David L. Windsor, Cincinnati, Ohio, and David R. Heine, Tucson, Ariz., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 2, 1979, Ser. No. 54,048
Int. Cl.³ B23K *9/00*
U.S. Cl. 219—121 PQ **8 Claims**

1. Inductively coupled plasma torch apparatus formed with elongate tubes providing concentric coolant, plasma and sample gas passageways comprising:

a coolant tube,

a plasma tube disposed concentrically within the coolant tube,

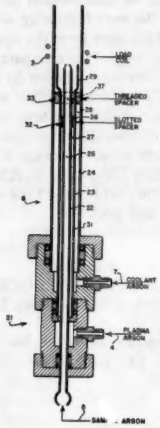
a sample tube disposed concentrically within said plasma tube,

a base detachably supporting the lower ends of said tubes in their concentric arrangement, and

disc-like spacer rings disposed at the upper ends of said tubes in frictional engagement with the tube walls, said rings including:

a first ring spanning the radial space between said coolant and plasma tubes, and

a second ring spanning the radial space between the plasma and sample tubes,



said first ring being provided with slanted channel means directing the coolant tube gas flow in a spiraling flow pattern for improving its heat transfer capability and said second ring with transverse channel means producing a laminar plasma gas flow pattern, and

said frictional engagement of said rings maintaining the upper end concentricity of said tubes while permitting them to be dismountably separated one from another.

4,266,114

APPARATUS FOR THE REMOTE CONTROL OF MAINS OPERATED DC AND AC WELDING MACHINES

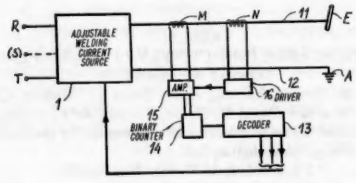
Kjell Hansen, Oslo, Norway, assignor to Jon Erlend Glømmen, Olso, Norway

Continuation of Ser. No. 906,179, May 15, 1978, abandoned, which is a continuation of Ser. No. 723,852, Sep. 17, 1976, abandoned. This application Mar. 20, 1979, Ser. No. 22,242

Claims priority, application Norway, Sep. 26, 1975, 753286

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—132 **3 Claims**



1. Apparatus for the remote control of a mains-operated arc welding machine of the type that supplies welding current from a signal-controlled welding current source through respective cables of a welding current circuit to a welding electrode and a workpiece, said apparatus comprising:

(a) a selectively-operable portable regulating device including a controllable semiconductor switching element connected in series with an impedance between terminals provided in said device for connecting said device across said cables, a trigger circuit connected for energization between said terminals and operable, when energized from said cables, to deliver a train of control pulses to said semiconductor switching element for opening and closing the series connection of said switching element and impedance between said terminals so as to cause current pulses to flow through said cables in synchronism with said control pulses, and settable means connected to said trigger circuit for stopping the operation thereof when the number of control pulses that flow through said cables corresponds to the setting of said settable means;

(b) a regulating circuit in said welding machine adapted to detect the number of said current pulses flowing through said cables and to supply to said welding current source a control signal dependent upon the detected pulse number; and

(c) a blocking circuit in said welding machine for preventing the formation of said control signal by said regulating circuit when currents of the same order of magnitude as the welding current flow in said cables.

4,266,115

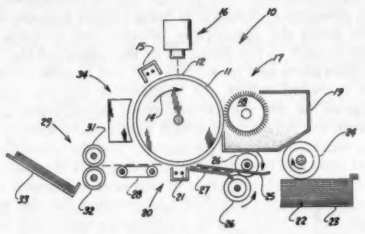
HOT ROLL FUSING DEVICE

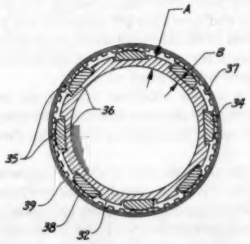
Hugh St. L. Dannatt, Bethel, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed May 21, 1979, Ser. No. 41,025

Int. Cl.³ H05B *3/10*

U.S. Cl. 219—216 **16 Claims**





1. A heated fuser roll for use in a fusing apparatus for fixing toner images to a support surface, said fuser roll comprising:

an electrically conductive core member including a plurality of axially disposed longitudinal channels lying along the outer surface of said core member;

a heating element formed of a semiconducting ceramic material having a positive temperature coefficient of resistivity and exhibiting a Curie temperature transition point at which the resistance of said material increases with increasing temperature positioned in each of said channels;

a layer of a thermally conductive material covering the outer exposed surfaces of both said core member and said heating elements; and

a sleeve member positioned around said thermally conductive material, said thermally conductive material being in a resilient form to withstand repeated thermal cycles and

remain in contiguous contact with said core member, heating elements and sleeve member.

4,266,116

ELECTRODE-TYPE STEAM GENERATING DEVICE FOR GENERATING SUPERHEATED STEAM

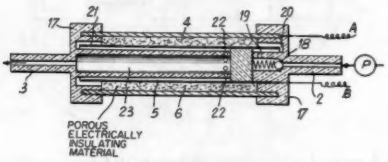
Daniel Bauer, Le Raincy; Jean-Paul Beck, Paris; Claude Boiteau, Verneuil, and Didier Garoche, Levallois, all of France, assignors to L'Oreal, Paris, France

Filed Feb. 14, 1978, Ser. No. 877,725

Claims priority, application Luxembourg, Feb. 16, 1977, 76777

Int. Cl.[3] **H05B** *3/60;* **F22B** *1/30;* **B05B** *1/24*

U.S. Cl. 219—274 **4 Claims**



1. Steam generating apparatus for generating steam from a liquid comprising:

a first end member of electrically insulating material;

a second end member of electrically insulating material;

an inner tubular electrode extending between said end members;

an outer tubular electrode surrounding said inner electrode and extending between said end members so that there is an annular space beween the inside surface of the outer electrode and the outside surface of the inner electrode;

said annular space having an inlet adjacent one of said end members and an outlet adjacent the other of said end members;

means connecting said electrodes in series across a source of electrical energy;

a porous material substantially filling said annular space between the electrodes, said porous material being electrically insulating, having a small thermal inertia, and being chemically inert to the liquid to be vaporized,

means for directing liquid to be vaporized into the inlet of said annular space;

means within said inner electrode for defining a vaporized fluid passage extending along and including an interior surface of said inner electrode, said passage communicating with the outlet of said annular space and extending along a substantial portion of the inner electrode in a direction from said outlet toward said inlet; and

tubular outlet means communicating with said passage at a location remote from the outlet of the annular space for discharging vaporized liquid from the apparatus.

4,266,117

SELF-VENTILATING INFRA-RED RAY HEATER

Ray L. Pardue, Chagrin Falls, and Arnold L. Buehl, Solon, both of Ohio, assignors to Econoray, Inc., Solon, Ohio

Filed Nov. 6, 1978, Ser. No. 958,169

Int. Cl.[3] **H05B** *1/00, 3/44*

U.S. Cl. 219—343 **7 Claims**

1. A self-ventilating infra-red ray heater comprising:

an arcade-type housing having a crown portion and terminating laterally in opposite wall portions in respect to its longitudinal axis to define a longitudinally coextensive cavity and an opening therefor between said side-wall portions;

an elongate heating element having a heat-emitting section of a length substantially that of the housing adapted to be mounted adjacent to said opening with a mounting section of the element extending beyond one end of the housing;

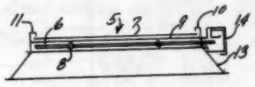
first and second end plates of a size sufficient to cover the opposite ends of said housing;

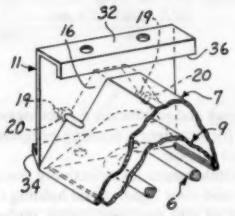
first fastening means for securing the element to said first end plate;

second fastening means for securing said end plates to said housing;

said crown portion having notches within end portions thereof adjacent said end plates to define ventilation ports therethrough;

said end plates have upper flanges turned inwardly over, and spaced from, said crown portion in overhanging relation with said ports;





hanger means constructed to engage spaced portions of said heat-emitting section in support of the element centrally with respect to said side-wall portions, said hanger means engaging and connecting with said side-wall portions for the support thereof by said housing; and

a sheet-like reflector of greater width in its planate condition than the distance between parts of the side-wall portions engaged by said hanger means, said reflector being normally positioned in concavo-convex configuration between, and in spaced relation with, said crown portion and said element with the lateral edges of the reflector engagably received by surfaces defined by said side-wall portions and the hanger means adjacent the connections thereof; the periphery of said reflector extending into substantially continuous close proximity with said end plates and said side-wall portions.

4,266,118

COOKING CONTROL CIRCUIT FOR COOKING RANGE

Akio Takase; Takao Tsutsumi, and Hiroaki Tsukahara, all of Gunma, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1978, Ser. No. 899,160

Claims priority, application Japan, Apr. 25, 1977, 52/47718; Sep. 20, 1977, 52/113116

Int. Cl.[3] **H05B** *9/06*

U.S. Cl. 219—492 **2 Claims**

1. A cooking program circuit for a cooking range comprising:

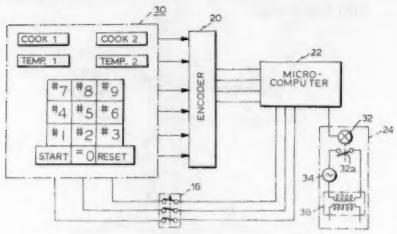
a plurality of operating members disposed in a matrix having a plurality of input scan lines and a plurality of output lines, each of said operating members for producing an output signal on a corresponding output line when manually actuated and when a corresponding input scan line is enabled;

a scanning circuit connected to said plurality of input lines of said matrix for enabling said input scan lines one at a time in turn;

an encoder connected to said plurality of output scan lines and to said scanning circuit for producing an encoded output corresponding to said operating members manually actuated according to said output signals and said input scan line enabled;

a holding circuit connected to said encoder having a reset input, for holding said encoded output corresponding to the last actuated operating member until reset by a reset signal applied to said reset input;

a micro-computer connected to said holding circuit having a reset output, for reading said encoded output held in said



holding circuit and producing a reset signal on said reset output and for initiating a cooking program according to said encoded output;

a disabling switch means for selectively connecting or disconnecting said reset input of said holding circuit and said reset output of said micro-computer under manual control, whereby said holding circuit is not reset when said reset input and said reset output are disconnected; and

a cooking control circuit connected to said micro-computer for controlling the operation of an associated cooking range according to said program.

4,266,119

HAIRPIN-TYPE ELECTRIC RESISTANCE HEATING ELEMENT

Albert B. Best, Danbury, Conn., assignor to The Kanthal Corporation, Bethel, Conn.

Filed Aug. 15, 1979, Ser. No. 66,683
Int. Cl.³ H05B 3/08
U.S. Cl. 219—541 **3 Claims**

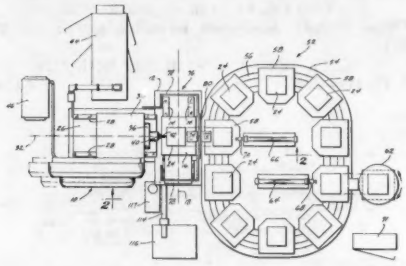
1. An electric resistance element comprising a refractory metal silicide resistance wire, a terminal comprising a first length of refractory metal silicide wire having a uniform contour and cross-sectional area through its extent, said resistance wire being positioned transversely across one axial end of said first length, and a second length of refractory metal silicide wire having one end abutting said end of said first length and said resistance wire sandwiched between said ends and the latter electric resistance butt welded together and thereby integrated with said resistance wire, said lengths having a contour and cross-sectional area substantially identical with each other and being axially aligned with each other, said cross-sectional area of said lengths being larger than the cross-sectional area of said resistance wire.

4,266,120

UNMANNED MACHINING CENTER WITH TOOL CHECKING

Richard Johnstone, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Division of Ser. No. 863,435, Dec. 22, 1977, Pat. No. 4,185,376.
This application Jul. 23, 1979, Ser. No. 59,540
Int. Cl.³ G06M 3/02
U.S. Cl. 235—92 CT **1 Claim**



1. A method of checking different tools having metal teeth in the spindle of a machine tool to determine whether or not the tool is broken, comprising the steps of: mounting a proximity sensor on said machine tool within the range of travel of a tool in said spindle, said proximity sensor being operable to produce an output signal in response to the presence of a metal object within a predetermined distance from said proximity sensor; moving said spindle to place a portion of said tool therein within said predetermined distance from said proximity sensor; recording the number of teeth that should be on each tool to be used in the spindle for the machining operations; rotating the spindle one complete revolution; counting the output pulses produced by said proximity sensor by the passage of each metal tooth of said tool during one complete revolution of said spindle; comparing the total number of output pulses produced by said proximity sensor for one complete revolution of said spindle to a signal representing the total number of teeth that should be on the particular tool in the spindle; actuating a tool storage magazine to select another tool of the same size and type if the total number of output pulses produced by said proximity sensor for one complete revolution of said spindle is different from the total number of teeth that should be on said tool; and initiating operation of a tool change mechanism to replace the broken tool with the newly selected tool from said tool storage magazine.

4,266,121

RECEIPT SLIP ISSUING APPARATUS

Minoru Hirose, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 29, 1979, Ser. No. 89,634
Claims priority, application Japan, Nov. 10, 1978, 53-138648; Nov. 17, 1978, 53-158130[U]; Feb. 22, 1979, 54-22056[U]
Int. Cl.³ G06F 7/08; G06K 3/12, 13/00
U.S. Cl. 235—381 **11 Claims**

1. A receipt slip issuing apparatus, comprising:

a body;

an identification medium inlet in said body;

a blank storage chamber disposed in said body to contain a receipt slip blank or paper formed of at least two-ply sheets and including longitudinally continuous receipt slips;

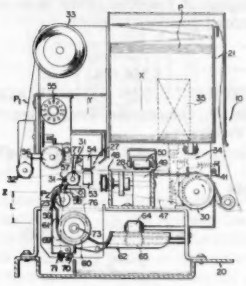
blank feed means drawing said blank out of said storage chamber and feeding said blank only in one direction through a blank path defined inside said body;

a medium path defined inside said body, having one end connected to said inlet, and crossing said blank path;

medium feed means carrying through said medium path an identification medium inserted through said inlet;

transcription means disposed in said blank path at a position to cross said medium path and transferring specific account information recorded in said identification medium to said receipt slip blank;

printing means disposed in said blank path at a distance from said transcription means, whereby transient account information provided by said apparatus is printed on said receipt slip blank, said printing means being so located as to correspond to a first line on one slip of said blank to be printed when said blank is in a position for the transcription by said transcription means;



cutter means for cutting at least one sheet of said receipt slip blank for each slip, said cutter means being so located as to correspond to a position to cut said at least one sheet for each slip when said blank is in said position for the transcription by said transcription means;

a slip outlet in said body; and

slip delivery means for carrying the receipt slip out by said cutter means to said slip outlet through a slip delivery path defined inside said body.

4,266,122

METHOD AND APPARATUS FOR IDENTIFICATION OF DOCUMENTS

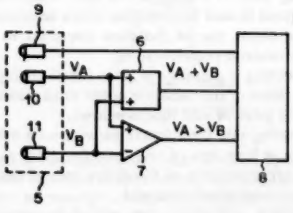
Rolf Schmidhauser, Cham, Switzerland, assignor to LGZ Landis & Gyr Zug AG, Zug, Switzerland

Filed Jan. 17, 1980, Ser. No. 112,904

Claims priority, application Switzerland, Jan. 31, 1979, 929/79

Int. Cl.[3] **G06K** *7/14, 19/06*

U.S. Cl. 235—454 **7 Claims**



1. In a method of identifying a document with the aid of at least two different types of optically readable markings disposed on said document, and of at least two light sensors, each individual marking modifying light impinging thereon in a characteristic manner by diffraction or refraction, each light sensor being associated with a respective marking, and sensing the light modified by the associated marking,

the steps comprising:

placing said different types of markings in a predetermined cyclical sequence on at least one track of said document so as to substantially avoid the creation of any optically readable gap between adjacent markings,

thereafter erasing at least selected portions of said markings, while

maintaining in selected groups of two adjacent markings at least a portion of one of said adjacent markings, in dependence of coded information to be recorded on said document,

obtaining a timing signal from said light sensors in dependence of the light modified by said markings, and sensed by said light sensors,

with the aid of said timing signal, serially reading out the coded information from the marking portions, remaining on the document, and

examining the read-out coded information obtained from the portions of said markings remaining on said document.

4,266,123

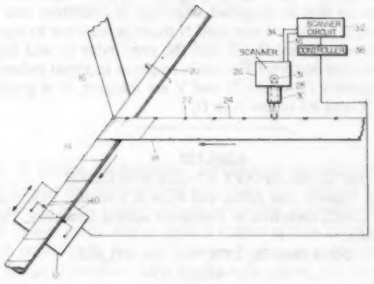
AUTOMATIC SCANNER

Nelson Friberg, Toledo, Ohio, assignor to Owen-Illinois, Inc., Toledo, Ohio

Filed Nov. 20, 1978, Ser. No. 962,576

Int. Cl.[3] **G01J** *1/32*

U.S. Cl. 250—205 **10 Claims**



1. A scanner comprising:

a light source for projecting light towards an inspection point;

a photodetector for receiving light which is reflected from said inspection point;

feedback means connected between said photodetector and said light source for automatically adjusting the intensity of said light source as a function of the average amount of light received by said photodetector so as to prevent saturation of said photodetector; and

detection means connected to said photodetector for generating an output signal whenever the magnitude of change in the amount of light received by said photodetector over a predetermined time period exceeds a predetermined level.

4,266,124

PHOTOELECTRIC OBJECT DETECTOR SYSTEM

Daniel R. Weber, Tewksbury, and Raymond C. Webb, Foxboro, both of Mass., assignors to Data Instruments, Inc., Lexington, Mass.

Filed Aug. 10, 1979, Ser. No. 65,512

Int. Cl.[3] **G01V** *9/04*

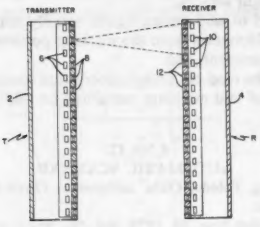
U.S. Cl. 250—221 **18 Claims**

1. In an object detecting system for determining when an object intrudes into a given area, said system comprising a transmitter for providing a light barrier that extends along said area and a receiver for detecting when the barrier is encountered by an intruding object, an improved transmitter comprising:

a plurality of light sources each adapted when operated to produce a beam of light that extends along said area with each beam transversing a different selected portion of said area; and

strobing means for operating said light sources repetitively in a predetermined sequence;

said strobing means comprising pulse generating means adapted to produce a train of signal pulses, means coupled to said pulse generating means for operating said light



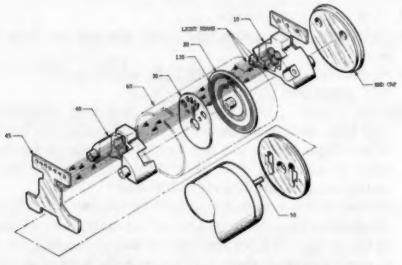
sources in said predetermined sequence in response to signal pulses from said pulse generating means, and control means for varying the output of said pulse generating means so that in each full sequence of operation one of said light sources is operated N times in response to signal pulses at a frequency f1 and the remainder of said light sources are operated Y times in response to signal pulses at a frequency f2, where N and Y are integers, N is greater than Y and F2 is less than f1.

4,266,125

OPTICAL SHAFT ANGLE ENCODER

Howard C. Epstein, Los Altos, and John J. Uebbing, Palo Alto, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 21, 1978, Ser. No. 971,985
Int. Cl.[3] G01D *5/34*
U.S. Cl. 250—231 SE **8 Claims**



1. A shaft angle encoder for encoding the angular rotation of a shaft, the encoder having a low sensitivity to eccentricity errors and comprising:

source means for providing light;

first light modulating means having a circular track aligned concentrically relative to the shaft, the circular track having periodically alternating transmissive and non-transmissive sections for modulating the light;

second light modulating means having first and second optical areas, each optical area having a transmissive section aligned with the circular track, the transmissive sections of the first and second optical areas being 180° out of phase relative to the periodicity of the transmissive sections of said first light modulating means;

said first and second light modulating means positioned to serially receive and modulate the light;

one of said light modulating means being coupled to rotate with the shaft, the other of said light modulating means fixedly mounted so as to be independent of the rotation of the shaft;

detector lens means positioned to receive the light as modulated by the first and second light modulating means having a lens portion comprising siamesed first and second elements, the first and second elements positioned to receive the light transmitted through the first and second optical areas respectively for focusing the light received thereby at first and second positions respectively; and

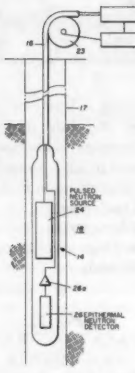
detector means positioned to receive the light focused at the first and second positions for generating first and second electrical signals in response to the light received at the first and second positions respectively.

4,266,126

PULSED RADIATION DECAY LOGGING

William R. Mills, Jr., Duncanville, Tex., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Jun. 25, 1979, Ser. No. 51,567
Int. Cl.[3] G01V *5/00*
U.S. Cl. 250—264 **9 Claims**



1. In the logging of a well traversing a subterranean formation, the method comprising:

(a) irradiating said formation with a burst of fast neutrons whereby said fast neutrons enter said formation and are moderated therein to form a lower energy neutron population,

(b) during each of a plurality of time windows occurring subsequent to said fast neutron bursts selectively measuring the count rate of radiation attendant to said lower energy neutron population,

(c) establishing a plurality of ratio functions representative of the ratios of the radiation count rates measured during adjacent pairs of said time windows,

(d) comparing said ratio functions with each other and employing at least one of said ratio functions to generate a signal representative of the decay rate of said lower energy neutron population, and

(e) recording said decay rate signal in correlation with depth.

4,266,127

MASS SPECTROMETER FOR CHEMICAL IONIZATION AND ELECTRON IMPACT IONIZATION OPERATION

Cherng Chang, 3065 Maginn Dr., Xenia, Ohio 45385

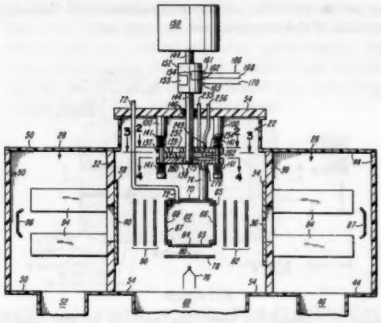
Filed Dec. 1, 1978, Ser. No. 965,255
Int. Cl.[2] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—288 **51 Claims**

1. In a mass spectrometer provided with a vacuum housing

and an ionization region within the vacuum housing, comprising:

chemical ionization means for formation of ions within the ionization region through chemical ionization,

venting means for alternately opening and closing gaseous



communication between the ionization region and the vacuum housing, through the venting means,

and operation means for operation of the chemical ionization means and the venting means within an operation cycle, said operation means including means for performing the operation cycle repetitively at a preselected frequency.

4,266,128

ELECTRON MICROSCOPE WITH OPTICAL MICROSCOPE

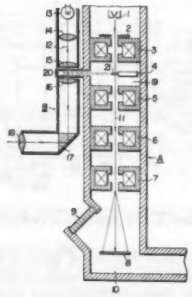
Shigeru Suzuki, 2736-34, Sunagawa-cho, Tachikawa-shi, Tokyo, Japan (190), and Kazuo Ohsawa, 295, Nakagami-cho, Akishima-shi, Tokyo, Japan (196)

Filed Dec. 27, 1979, Ser. No. 107,627

Claims priority, application Japan, Dec. 28, 1978, 53-161214

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—311 **6 Claims**



1. An electron microscope provided with an optical microscope, wherein said optical microscope is juxtaposed adjacent to the electron microscope assembly so that the optical axis of said optical microscope extends in parallel to the lens axis of said electron microscope assembly, comprising

specimen transfer means provided in common to both of said electron microscope assembly and said optical microscope for interchangeably positioning a specimen to be observed at respective predetermined positions along said lens axis and said optical axis for observations through said electron microscope and said optical microscope, respectively, said specimen transfer means including specimen carrier means adapted to be displaced in two-dimensional direction in a plane extending orthogonally to both of said lens axis and said optical axis thereby to interchangeably position said specimen at said predetermined positions through displacement of said specimen carrier means corresponding to a distance between said lens axis and said optical axis, whereby the same specimen is allowed to be interchangeably observed through both of said electron microscope and said optical microscope by correspondingly manipulating said specimen transfer means.

4,266,129

DEVICE FOR VIEWING RESIDUAL LIGHT IN THE VISIBLE AND THE NEAR INFRARED SPECTRUM

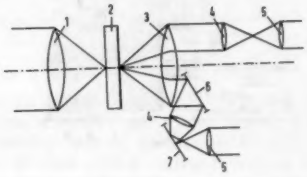
Frits J. Versteeg, Rotterdam, and Abraham Groeneweg, Maassluis, both of Netherlands, assignors to N.V. Optische Industrie "De Oude Delft", Delft, Netherlands

Filed Apr. 27, 1979, Ser. No. 33,836

Claims priority, application Netherlands, May 9, 1978, 7804990

Int. Cl.³ H01J *31/49*

U.S. Cl. 250—330 **5 Claims**



1. A device for binocular viewing of residual light in the visible and the near infrared spectrum, said device comprising an optical input system, image intensifier means, a collimator, two ocular paths, and an optical output system associated with each ocular path, said image intensifier means being one singular image intensifier of the non-inverting type, and each optical output system being arranged so that a single image inversion is performed in each ocular path.

4,266,130

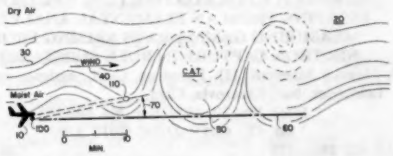
METHOD AND APPARATUS FOR DETECTING CLEAR AIR TURBULENCES

Peter M. Kuhn, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Filed Oct. 13, 1978, Ser. No. 950,943

Int. Cl.³ G01J *1/00*

U.S. Cl. 250—339 **8 Claims**

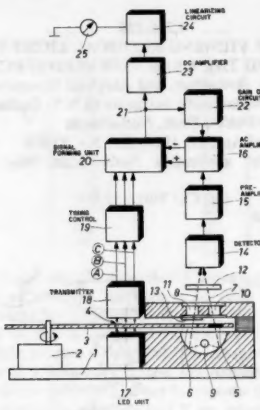


7. An improvement to a system mounted on an aircraft for detecting clear air turbulence in the earth's atmosphere having means for sensing infrared radiation in the water vapor rotational wavelength band in a single atmospheric volume located ahead of said aircraft, said improvement to said sensing means comprising means for orienting said sensing means upwardly to an elevation substantially at 10° from the flight path of said aircraft.

4,266,131
GAS ANALYZER

Hannu Ahjopalo, Vantaa, and Jorma J. Auvinen, Nummela, both of Finland, assignors to Instrumentarium OY, Helsinki, Finland

Filed Aug. 31, 1979, Ser. No. 71,564
Claims priority, application Finland, Sep. 1, 1978, 782692
Int. Cl.³ G01N *21/26*
U.S. Cl. 250—341 **5 Claims**



1. A gas analyzer, in particular a CO_2 analyzer, comprising a measuring chamber for the gas to be examined, a reference chamber from which the gas to be measured has been drawn off, a light source, and a chopper disk to chop the light beam so that the beam alternatingly passes through the measuring and reference chambers and generates a related measuring signal and a reference signal and a dark signal, signal processing means for detecting the difference between said signals, an automatic gain control circuit connected to said signal processing means to maintain constant the difference between the dark signal and the reference signal from the reference chamber, a linearizing circuit connected to said signal process means for compensating for the non-linearity of the difference between the measuring signal and the reference signal, and an attenuation member disposed in the path of the light beam passing through the reference chamber and which in the wave length range employed has a high enough attenuation capacity to cause a shift of the operating point of the gain control circuit so that the linearizing circuit operates at the gently sloping part of the absorption versus concentration curve.

4,266,132
APPARATUS FOR CONTROLLING NEUTRONS ESCAPING FROM AN ELEMENTAL ANALYZER MEASURING GAMMA RAYS ARISING FROM NEUTRON CAPTURE IN BULK SUBSTANCES

J. Howard Marshall, III, Pasadena, Calif., assignor to MDH Industries, Inc., Monrovia, Calif.

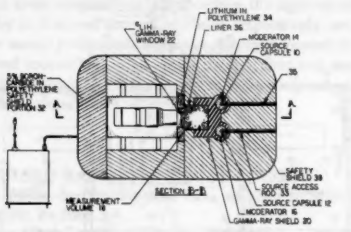
Filed Jun. 20, 1977, Ser. No. 808,103
Int. Cl.³ G01N *23/00*; G01T *3/00*
U.S. Cl. 250—359 **35 Claims**

1. An improved apparatus for the on-line analysis of the composition of a bulk substance, wherein said analysis includes the production and capture of neutrons and the detection of the resulting capture gamma rays, said apparatus comprising, in combination:

(a) means for containing the bulk substance to be analyzed;

(b) neutron-producing means for providing neutrons, which generate gamma rays by neutron-capture reactions with the nuclei in the bulk substance being analyzed, the neutron-producing means being operably associated with the means for containing the bulk substance;

(c) a gamma-ray detector operably associated with the neutron-producing means and the means for containing the bulk substance being analyzed, the gamma-ray detector producing electrical signals indicative of the gamma-ray energies to provide for the measurement of the energy spectrum of the capture gamma rays; and



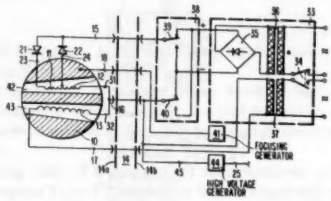
(d) means for absorbing neutrons emitted by the neutron-producing means which are not captured by the bulk substance being analyzed, the neutron-absorbing means comprising compounds which are placed outside of the means for containing the bulk substance being analyzed and which attenuate the flux of uncaptured neutrons without producing or scattering significant numbers of gamma rays which reach the gamma-ray detector;

whereby the measurement accuracy of the apparatus is improved and radiation hazards are reduced.

4,266,133
MULTIPLE FOCUS X-RAY GENERATOR

Walter Weigl, Edison; Ulf Bergman, Iselin, and Lennart Baum, Edison, all of N.J., assignors to Siemens Corporation, Iselin, N.J.

Filed Nov. 8, 1979, Ser. No. 92,285
Int. Cl.³ H05G *1/30*
U.S. Cl. 250—402 **12 Claims**



1. A multiple focus X-ray generator comprising, in combination:

(a) an electron source having at least a first and a second cathode filament, one end of each of said first and second filaments being connected together to a first connection point;

(b) a first, second and third terminal associated with the serial connection of said filaments, said first and third terminals being formed by the outer ends of the serial connection, and said second terminal being formed by said first connection point;

(c) a first and a second diode, each having two electrodes, the first diode being connected with one of its electrodes to said first terminal, the second diode being connected with one of its electrodes to said second terminal, said diodes being connected with the other of their electrodes to a second combination point and being poled in opposite directions;

(d) means for supplying direct current, said d-c supply means having two poles, one of said poles being adapted to be

connected to said second connection point of said diodes and the other of said poles being adapted to be connected to said third terminal, and said d-c supply means including switching means for changing the polarity of the d-c voltage between said two poles; and

(e) a cable containing at least a first and a second connection line, wherein said first connection line is arranged between said one pole of said d-c supply means and said second connection point, and wherein said second connection line is arranged between said other pole of said d-c supply means and said third terminal.

4,266,134

X-RAY DIAGNOSTIC GENERATOR COMPRISING AN INVERTER SUPPLYING THE HIGH VOLTAGE TRANSFORMER

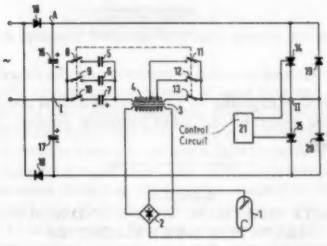
Kurt Franke, Erlangen, and Gerd Seifert, Spardorf, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,223

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1978, 2802513

Int. Cl.[3] **H05G** *1/10*

U.S. Cl. 250—409 **4 Claims**



1. An x-ray diagnostic generator comprising

an x-ray tube,

a high voltage transformer supplying the x-ray tube,

an inverter connected to the input of the high voltage transformer, and

a d.c. voltage source comprising a mains rectifier supplying the inverter,

the inverter (**4** through **24**) having an LC resonant storage circuit (**3** through **7**, **22**, **23**) and a switching device (**14**, **15**) for the alternate connection of said storage circuit (**3** through **7**, **22**, **23**) to the d.c. voltage source (**16**, **17**),

said LC resonant storage circuit comprising switchable electrical reactance means switchable to a plurality of respective different values to provide respective different pre-programmed LC series circuits for selective connection to said high voltage transformer and respectively adapted to operation with said high voltage transformer operating under respective different load conditions, and

changeover switch means coupled with said switchable electrical reactance means for selectively establishing any selected one of said different preprogrammed LC series circuits in operative connection with said high voltage transformer, thereby to adapt the parameters of said LC resonant storage circuit to any of a plurality of respective load conditions of said high voltage transformer.

4,266,135

METHOD OF DETERMINING COLLIMATOR APERTURE EFFICIENCY AND APPARATUS WITH AN EFFICIENT COLLIMATOR APERTURE SIZE

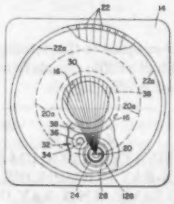
John J. Kuwik, Hudson; Arthur B. Braden, Solon; Samuel K. Taylor, Chardon, and John Covic, Wickliffe, all of Ohio, assignors to Ohio Nuclear, Inc., Solon, Ohio

Continuation-in-part of Ser. No. 812,317, Jul. 1, 1977, Pat. No. 4,190,773. This application Dec. 27, 1978, Ser. No. 973,570

The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.

Int. Cl.[3] **A61B** *600;* **G01N** *23/08*

U.S. Cl. 250—445 T **25 Claims**



1. A radiation aperture system for a CT scanner having a rotating source of radiation and a detector array; a series of stationary radiation detectors partially encircling the path of the source in the same plane at less than 1° intervals, the radiation aperture system comprising:

collimator means for restricting the radiation to an energy distribution having alternating relatively high energy and relatively low energy regions, said collimator means being mounted for rotation about the source; and,

drive means for causing counter rotation of said collimator means about the source as the source rotates such that each one of said relatively high energy regions is trained continously generally on a single stationary detector during part of rotation of the source.

4,266,136

TOMOGRAPHY WHEREIN SIGNAL PROFILES DERIVED FROM AN OUT-FANNING BEAM OF PENETRATING RADIATION CAN BE RECONSTRUCTED CORRESPONDING WITH PARALLEL INCIDENT RAYS

Simon Duinker, Bloemendaal, Netherlands, assignor to N. V. Optische Industrie "De Oude Delft", Delft, Netherlands

Division of Ser. No. 814,989, Jul. 12, 1977, Pat. No. 4,168,435, and a continuation-in-part of Ser. No. 798,672, May 19, 1977, abandoned. This application Apr. 9, 1979, Ser. No. 28,608

Claims priority, application Netherlands, Jul. 19, 1976, 7607976

Int. Cl.[3] **A61B** *6/00*

U.S. Cl. 250—445 T **6 Claims**

1. An apparatus for generating parallelized profile signals of a slice of an object, comprising;

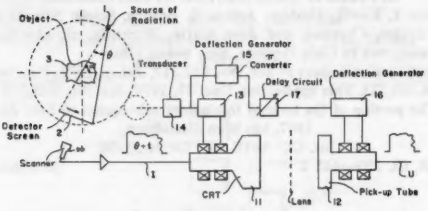
an X-ray source on one side of the object for generating a fan-shaped beam of X-ray radiation intercepting only one-half of a slice shaped section of the object,

detector means on the opposite side of the object and having a detector surface extending so as to intercept the fan-shaped beam to produce analog half profile signals,

means for effecting relative rotation between the object and the combination of the source and the detector means through a complete revolution about the object perpendicular to the fan-shaped beam,

said X-ray source and said detector means being arranged so that the fan-shaped beam has one side edge at the axis of

rotation and has the other side edge outside of the object, and



processing means coupled to the detector means for converting the analog half profile signals from the detector means into parallelized profile signals.

4,266,137

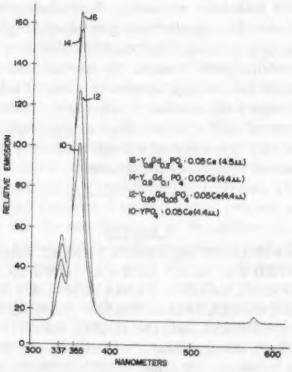
CERIUM ACTIVATED YTTRIUM GADOLINIUM PHOSPHATE X-RAY PHOSPHORS, PROCESS FOR PRODUCING SAME, AN X-RAY INTENSIFYING SCREEN EMPLOYING SAME

Francis N. Shaffer, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 673,255, Apr. 2, 1976. This application Jul. 14, 1977, Ser. No. 815,548

Int. Cl.[3] **G01J** *1/58*

U.S. Cl. 250—483 **1 Claim**



1. A process for producing cerium activated yttrium-gadolinium phosphate x-ray phosphor composition comprising:

(a) forming a uniform reaction admixture of a reactive yttrium source, a reactive gadolinium source, a reactive cerium source and an ammonium orthophosphate selected from monoammonium orthophosphate and diammonium orthophosphate wherein the Y:Gd atomic ratio is from about 7:3 to about 95:5, the Ce:Y and Gd atomic ratio is from about 0.005:1 to about 0.25:1 and the Y and Gd:PO_4 atomic ratio is from about 1:1.02 to about 1:1.25;

(b) conducting an initial heating step wherein the temperature of said admixture is raised from ambient temperature to at least 800° C. in a period of about 1.5 to about 2 hours and maintaining said temperature for at least about 30 minutes;

(c) cooling the heated material to ambient temperature:

(d) adding from about 5 to about 10% by weight of the original raw materials of a flux to said heated mixture and forming a relatively uniform admixture of said heated mixture and flux;

(e) heating the flux containing admixture to about 1100° C. to about 1400° C. for about 2 to 4 hours;

(f) adding the resulting heated material to a water-nitric acid solution and agitating sufficiently to form finely divided solids;

(g) separating said solids from said acid solution and washing said solids with water and drying said washed solids sufficiently to remove the water; and

(h) heating said dried solids in a reducing atmosphere at a temperature of from about 1150° C. to about 1200° C. for about 1 to 2 hours.

4,266,138

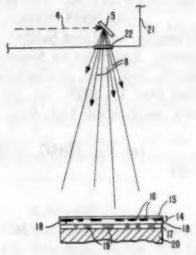
DIAMOND TARGETS FOR PRODUCING HIGH INTENSITY SOFT X-RAYS AND A METHOD OF EXPOSING X-RAY RESISTS

David A. Nelson, Jr., and Arthur L. Ruoff, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jul. 11, 1978, Ser. No. 923,756

Int. Cl.[3] **A61K** *27/02;* **A61N** *5/00;* **C08J** *1/02;* **G21G** *5/00*

U.S. Cl. 250—492 A **14 Claims**



1. A method of exposing an x-ray sensitive resist comprising exposing said resist to the x-ray radiation emitted from a diamond target.

4,266,139

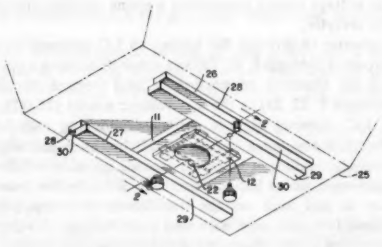
COMPOSITE SHIELDING MEANS AND MOUNTING MEANS FOR X-RAY MACHINES

Louis Sportelli, 175 Delaware Ave., Palmerton, Pa. 18071, and James F. Winterstein, 1443 Southridge Dr., Clearwater, Fla. 33516

Filed Jan. 7, 1980, Ser. No. 110,040

Int. Cl.[3] **G21F** *1/00;* **G21C** *11/00*

U.S. Cl. 250—515 **6 Claims**



1. A shielding device for an x-ray machine comprised of a transparent planar base member and a mounting means therefor: The planar base member consisting of a plurality of removable securing means mounted on one side thereof, a planar masking overlay with a cooperating securing means mounted on one side thereof adapted to removably engage the securing

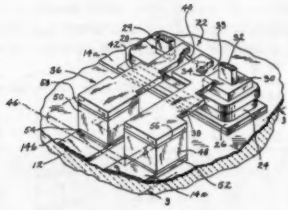
means of the base member, said overlay having a selected portion thereof being defined by x-ray impenetrable means whereby either a corresponding portion of a persons body or of an object will be protected by the selected portions; the mounting means therefor consisting of a pair of rails, each of which is comprised of an elongated member defining a staggered profile, openings disposed in the staggered profile, fastening means adapted to be inserted into each of the openings with one of the fasteners adapted to secure the elongated members to the x-ray machine, with the other fasteners frictionally engaging the base member to position the same on the x-ray machine.

4,266,140

POSITIONING MEANS FOR OPTICALLY COUPLABLE CIRCUIT ELEMENTS

Lance R. Kaufman, 131 White Oak Way, Mequon, Wis. 53092

Filed Nov. 21, 1978, Ser. No. 962,750
Int. Cl.³ G02B *27/00*
U.S. Cl. 250—551 **7 Claims**



1. An optically coupled solid state power device, comprising:

an electrically non-conductive substrate providing a substantially planar surface having at least first and second circuits of thick-film conductors applied thereto,

an optically couplable light responsive controllable current conduction circuit including a light responsive device and a light emitting element, said light responsive device being mounted on said substrate and connected to the thick-film conductors of the first circuit; and

arm means having a first portion mounting said light emitting element adjacent one end thereof for rendering the device and element optically couplable and a second portion connected to said thick-film conductors of said second circuit and cantilevering said element into proximity with said device mounted on said substrate to optically couple said element and device.

4,266,141

TONER DEVELOPING ABILITY MEASURING SYSTEM FOR ELECTROSTATOGRAPHY

Koji Hirakura; Yasuo Sawada, and Kenta Watase, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

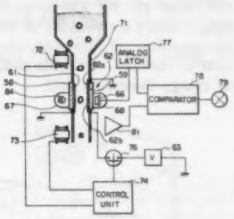
Filed Jul. 16, 1979, Ser. No. 57,882
Claims priority, application Japan, Jul. 8, 1978, 53-83246; Sep. 14, 1978, 53-113082; Dec. 29, 1978, 53-182714[U]; Dec. 29, 1978, 53-182715[U]; Feb. 27, 1979, 54-24551[U]
Int. Cl.³ G01N *21/00*
U.S. Cl. 250—564 **19 Claims**

1. An apparatus for sensing a developing ability of a powdered developer for electrostatography, including an upstanding passageway through which the developer is caused to flow by gravity, attraction means disposed in the passageway for attracting the developer to the attraction means and sensor means for sensing an amount of developer attracted to the attraction means, characterized by comprising:

valve means disposed in the passageway above the attraction means;

aperture means disposed in the passageway below the attraction means for defining a restricted aperture; and

control means for controlling the valve means to alternatingly open to allow developer to accumulate in the passageway from the aperture means upwardly above the attraction means while a restricted amount of developer



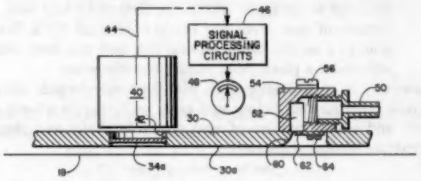
flows downwardly through the aperture means; and close to allow the accumulated developer to flow downwardly below the attraction means; the control means controlling the sensor means to sense the amount of developer attracted to the attraction means after the accumulated developer has flowed downwardly below the attraction means.

4,266,142

FLUID SYSTEM AND METHOD

Juan H. Crawford, Dublin, Ohio, assignor to AccuRay Corporation, Columbus, Ohio

Filed Jun. 7, 1976, Ser. No. 693,492
Int. Cl.³ G01N *21/88*
U.S. Cl. 250—572 **38 Claims**



1. In the use of a radiation device having a surface including window means in the path of radiation affecting the output response of a radiation detector, the method of maintaining substantially constant the radiation transmission characteristics of the portion of the radiation path including the window means and thereby reducing the probability of error in the detector output response resulting from the presence of an unpredictable amount of extraneous radiation-absorbing or scattering material in the path or at the window means, comprising

forming a jet of fluid in a manner such that the jet is attached to the surface by implementation of the Coanda effect and thereby directed to flow over the window means.

4,266,143

APPARATUS FOR PRODUCING ELECTRICAL ENERGY FROM OCEAN WAVES

Ting F. Ng, 29 Ludlow St., New York, N.Y. 10002

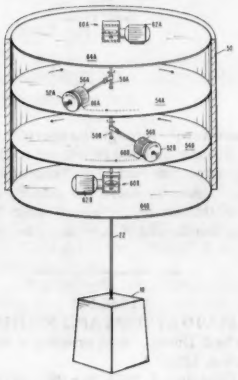
Filed Sep. 19, 1979, Ser. No. 76,903
Int. Cl.³ F03B *13/12*
U.S. Cl. 290—53 **5 Claims**

1. Apparatus for producing electrical energy from ocean waves, comprising

(a) a tank adapted for floating on ocean waves;

(b) an even number of generating sections in said tank, each

including a first rotatable shaft extending above a first horizontal platform, a first gravity wheel attached to said first rotatable shaft by means of a coupling member such that said wheel rolls on said first horizontal platform in a circular path around said shaft thereby driving said first rotatable shaft, said gravity wheels in one half of said generating sections being adapted to roll only clockwise while the other gravity wheels in the other half of the generating sections are adapted to roll in only a counter-clockwise direction, and first generator means operatively connected to said first rotatable shaft for receiving mechanical energy therefrom; and



(c) stabilizing means attached to the bottom of said tank for limiting the lateral movement of the bottom end of said tank; said stabilizing means including a pivot bar rigidly attached at its upper end to the bottom of said tank, the bottom of said pivot bar being connected by a flexible joint to a weight means so that said tank tilts from side to side about a pivot point at said flexible joint;

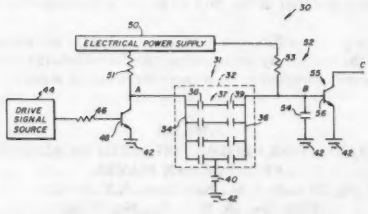
whereby as said floating tank tilts from side to side about a pivot point located below said tank, said gravity wheels will roll and cause rotation of said rotatable shafts and thereby generate electrical energy.

4,266,144

DETECTION MEANS FOR MULTIPLE CAPACITIVE SENSING DEVICES

Robert G. Bristol, Everett, Mass., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed May 14, 1979, Ser. No. 38,520
Int. Cl.³ H01H *36/00*
U.S. Cl. 307—116 **13 Claims**



1. A circuit for measuring the response of a capacitance responsive sensing element, comprising:

an electrical source means for providing a pulse signal to said capacitance responsive sensing element, said electrical source means including means for generating a square wave pulse signal; and

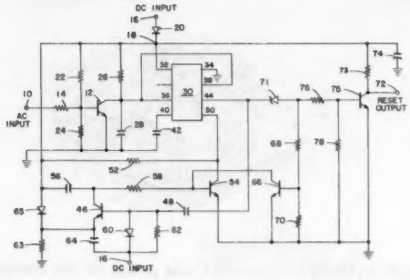
circuit means for measuring the amount of said pulse signal transmitted through said capacitance responsive sensing element to provide an indication of the amount of capacitance to which said element is responding, said circuit means for measuring including a time constant circuit and means for measuring the recovery time of said time constant circuit in response to said square wave signal as an indication of the amount of said pulse signal transmitted through said capacitance responsive sensing element.

4,266,145

TIME DEPENDENT MASTER RESET

Gene L. Amacher, Cambridge, and Wesley D. Dickover, Thornville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed May 9, 1979, Ser. No. 37,548
Int. Cl.³ H02H *7/20, 3/093, 3/247*
U.S. Cl. 307—200 A **13 Claims**



1. A circuit for protecting logic circuitry from transients caused by the decay of a power supply, comprising:

first circuit means for generating a first signal upon detecting the absence of an AC signal from said power supply;

second circuit means, responsive to said first signal, for generating a second signal upon said first signal reaching a predetermined voltage condition;

third circuit means, coupled to said second circuit means, for generating a third signal upon generation of said second signal for use in protecting said logic circuitry; and

fourth circuit means, coupled to said second and third circuit means, for maintaining said second and third signals until said power supply voltage decays to a predetermined level.

4,266,146

CHARGE TRANSFER DEVICES HAVING SWITCHABLE BLOCKING ELECTRODES

Arthur H. M. Van Roermund, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 3, 1978, Ser. No. 948,281
Claims priority, application Netherlands, Oct. 13, 1977, 7711228; Feb. 3, 1978, 7801242
Int. Cl.³ G11C *19/28;* **H01L** *29/78*
U.S. Cl. 307—221 D **4 Claims**

1. A charge transfer device having a switchable blocking electrode comprising:

a semiconductor layer of one conductivity type;

means for permitting information in the form of packets of charge to be locally introduced into said semiconductor layer;

read means for permitting the information to be read at another location in said layer;

control electrodes at least on one side of said layer;

said control electrodes connected to clock lines such that

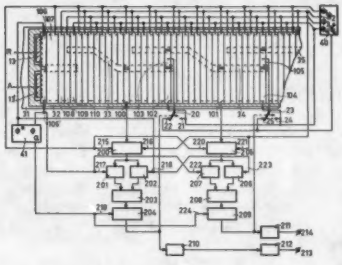
two adjacent electrodes are connected to different clock lines;

said clock lines connected to a clock pulse generator for delivering multiphase clock signals by means of which electrical fields are capacitively generated in said semiconductor layer, with which fields the charge packets can be transferred to said read means along a channel in said layer in a direction parallel to said layer;

at least one of said control electrodes being divided into two or more parts in a direction perpendicular to the direction of charge transfer;

switching means present between at least one of said control electrodes or a divided part thereof and the respective clock line for permitting the application of a voltage which at one time is equal to a phase of the clock signal which together with the clock voltages on adjacent control electrodes ensures the transfer of a charge packet in the channel underneath said at least one control electrode and at another time is equal to a blocking voltage which prevents the transfer of a charge packet in the channel underneath said at least one control electrode;

said switching means being constituted by a change-over switch having a master contact connected to said at least one control electrode, one contact connected to a terminal



for the application of a blocking voltage and another contact connected to a clock conductor to which said at least one control electrode would be connected in the absence of the change-over switch;

means for splitting the transfer channel into as many channel sections as there are parts into which said at least one control electrode is divided, each of the parts of said control electrode functioning as a control electrode for the channel section underneath it;

said means for splitting the transfer channel comprising isolation diffusions each of which is located below the area between two adjacent parts of the divided control electrode, each of said parts partly overlapping the relevant isolation diffusion, and the isolation diffusions extending substantially in the direction of charge transfer;

at least one sensing element arranged in front of the blocking electrode in the direction of the charge transfer and associated with the same channel as said blocking electrode, which sensing element is connected to a detector connected directly or indirectly to a comparator for comparing the magnitude of the signal appearing at the output of the detector with a reference signal, the output signal of the comparator being applied to a control input of said switching means either through or not through delay elements.

4,266,147

CIRCUIT ARRANGEMENT FOR FORMING A SPEED-PROPORTIONAL OUTPUT VOLTAGE FROM A SPEED-PROPORTIONAL PULSE SEQUENCE

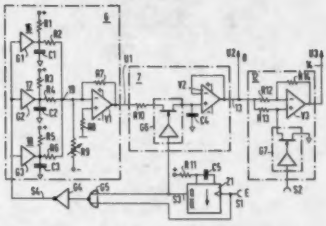
Karl Schalk, Nuremberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 5, 1978, Ser. No. 939,281

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740771

Int. Cl.[3] **G06G** *7/12;* **G01P** *3/48;* **H03K** *17/60*

U.S. Cl. 307—492 **13 Claims**



1. A circuit arrangement for forming a speed-proportional DC output voltage from a speed-proportional sequence of rectangular pulses comprising:

a pulse duration converter having an input for receiving the speed-proportional pulse sequence and including a plurality of R-C networks coupled to the input to respond simultaneously to the pulse sequence, each network having at least one resistor and one capacitor and a different time constant and each being adapted to form a signal which is a different exponential function of the input signal; and

means for superposing the signals of the R-C networks to form an output voltage which is inversely proportional to the pulse duration.

4,266,148

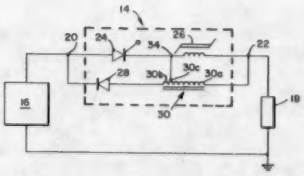
FAST CLOSING SWITCH SYSTEM

Arthur K. Wickson, Palos Verdes Estates, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Oct. 16, 1978, Ser. No. 951,809

Int. Cl.[3] **H03K** *17/73, 17/292, 17/04*

U.S. Cl. 307—252 J **18 Claims**



1. In combination:

means for producing current pulse;

load means;

switching means;

means for serially connecting said pulse producing means, said load means, and said switching means;

impedance means operably connected with said switching means for delaying application of a substantial portion of said current pulse to said load means until a predetermined time period has elapsed; and

priming means comprising transformer means having a primary winding connected in parallel with said impedance means and a secondary winding connected in parallel with said switching means for circulating a priming current

through said switching means during said predetermined time period.

4,266,149

PULSE SIGNAL AMPLIFIER

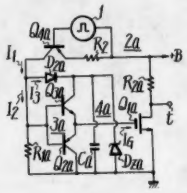
Tadao Yoshida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,218

Claims priority, application Japan, Jan. 31, 1978, 53-9457

Int. Cl.³ H03K *3/01, 17/60*

U.S. Cl. 307—255 **10 Claims**



1. A pulse signal amplifier comprising pulse current signal source; an impedance transfer circuit consisting of first and second transistors each having first, second and third electrodes, the first electrodes of which are connected to each other and supplied with the output of said pulse current signal source and second electrodes of which are connected to each other; a field effect transistor having gate, source and drain electrodes, the gate electrode of which is connected to the connection point of the second electrodes of said first and second transistors, the drain and source electrodes of which are connected between a DC voltage source and a reference point through a load, said pulse signal amplifier is characterized by:

(a) a capacitor having a pair of first and second terminals, the first terminal of which is connected to the third electrode of said first transistor and the second terminal of which is connected to the third electrode of said second transistor and to said reference point; and

(b) a diode connected between the output of said pulse current signal source and the third electrode of said first transistor so as to carry a part of the output current of said pulse current signal source to said capacitor to charge the same when the gate current of said field effect transistor is not supplied through the third and second electrodes of said first transistor.

4,266,150

CIRCUIT ARRANGEMENT FOR OPERATING ELECTROMECHANICAL SWITCHING DEVICES

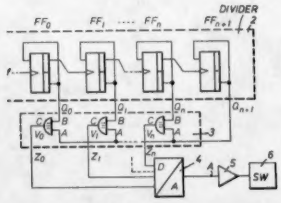
Günther Bergmann, Blaustein-Arnegg, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,828

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1977, 2740833

Int. Cl.³ H03K *4/02*

U.S. Cl. 307—268 **10 Claims**



1. In arrangement for operating an electromechanical switching mechanism in response to electrical stepping pulses including a source of such stepping pulses constituted by a frequency divider circuit receiving input pulses from a clock pulse generator, and a pulse shaping circuit connected between said frequency divider circuit and said switching mechanism for providing a stepping signal having a ramp-shaped waveform at its leading and trailing edges, said pulse shaping circuit comprising a logic linkage circuit connected to said frequency divider circuit, and a D/A converter connected to the output of said logic linkage circuit, the improvement wherein:

said logic linkage circuit includes a plurality of like logic elements, each having two inputs and an output;

said frequency divider circuit includes a like plurality of frequency divider stages connected in cascade with a further frequency divider stage connected to the output of said like plurality of frequency divider stages; and

each of said logic elements has one of its said inputs connected to an output of an associated respective one of said like plurality of frequency divider stages, the other of its said inputs connected to a common output of said further frequency divider stage, and its output connected with a respective input of said D/A converter.

4,266,151

SEMICONDUCTOR CIRCUIT WITH AT LEAST TWO FIELD EFFECT TRANSISTORS UNITED IN A SEMICONDUCTOR CRYSTAL

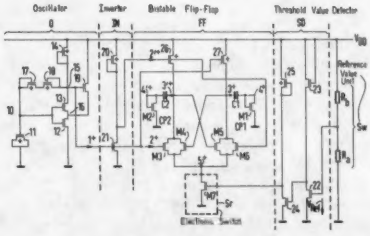
Kurt Hoffmann, Taufkirchen, and Roland Ernst, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 15, 1979, Ser. No. 20,857

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812378

Int. Cl.³ H03K *3/01*

U.S. Cl. 307—297 **16 Claims**



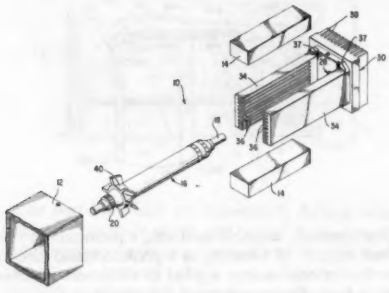
1. A semiconductor circuit, comprising: at least first and second pump circuit means connected for biasing by an auxiliary voltage a semiconductor area relative to ground; a first field effect transistor (FET) in the first pump circuit means and a second FET in the second pump circuit means; an oscillator; a bistable flip-flop having a direct signal input and an inverted signal input both connected to receive an output signal from the oscillator; third input means of the bistable flip-flop for controlling a turn-on threshold thereof; a control loop including a threshold voltage detector connecting to the third input means of the bistable flip-flop; and first and second signal outputs of the flip-flop being respectively connected to the first and second pump circuit means.

4,266,152

METHOD OF AND APPARATUS FOR COOLING ELECTRIC MOTORS AND TOTALLY ENCLOSED ELECTRIC MOTORS INCORPORATING SAME

John A. Herr, Garwood, and Wolfgang Jaffe, Roselle Park, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Mar. 29, 1979, Ser. No. 25,167
Int. Cl.³ H02K 9/00
U.S. Cl. 310—59 24 Claims



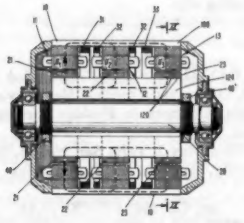
1. Cooling system for electric motors having a pair of elongated pole pieces and an armature therebetween positioned within a housing comprising at least one generally longitudinally extensive non-magnetic heat receptor and transfer element fabricated of a material having high thermal conductivity positioned within the motor housing adjacent and generally parallel the armature and pole pieces and means structurally connected with said heat transfer element and extending outwardly through the motor housing for transmitting heat outwardly through the housing and dissipating such heat externally of the housing.

4,266,153

DEMODULATOR OF POLYPHASE VOLTAGES INTERFERING AMONG THEMSELVES

Gerard O'Mahony, 95 rue de Versailles, 92410 Ville d'Avray, France

Filed Apr. 27, 1979, Ser. No. 33,957
Claims priority, application France, Apr. 28, 1978, 78 12835
Int. Cl.³ H02K 39/00
U.S. Cl. 310—111 17 Claims



1. A demodulator for the demodulation of polyphase voltages to n phases interfering among themselves and constituting a system of polyphase pseudo-sinusoidal voltages modulated in amplitude at a pulsation ϵ, comprising a polyphase rotating machine including:

(a) n armatures each of n phases connected by means of a common yoke of low loss material and fed by n systems of polyphase pseudo-sinusoidal voltages modulated in amplitude to a pulsation ϵ;

(b) a rotor mounted for free rotation and including n magnetic circuits connected through a common magnetic axle, the flux carrying parts of which are of a low loss magnetic material; and

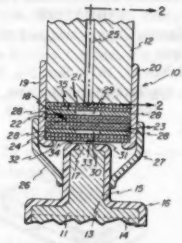
(c) n coils concentric with the axis of the magnetic axle and at the terminals of which n systems of polyphase voltages of pulsation ϵ are collected, each one of the n magnetic circuits of the rotor bearing a number of polar masses equal to the number of pairs of poles on the corresponding armature with the relative geometric keyings of homologous phases of the n armatures of the stator being identical to the relative longitudinal keyings of the polar masses of the rotor.

4,266,154

PERMEABLE MESH CURRENT COLLECTOR FOR DC MACHINES

Robert A. Marshall, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 19, 1979, Ser. No. 31,509
Int. Cl.³ H02K 13/00
U.S. Cl. 310—219 17 Claims



1. An electrical current collector for an electrical machine having a stator and a rotor, said rotor being rotatable relative to said stator about an axis thereof, comprising:

a rotor collector ring;

a stator collector ring encircling said rotor collector ring;

brush means affixed to said stator collector ring contiguous with the radially-inner surface thereof; said brush means comprising at least one layer of porous, compliant, electrically conductive, liquid metal-permeable material, disposed in face-to-face contact with said radially-inner surface of said stator collector ring and extending radially-inward to a location closely adjacent said rotor collector ring, and spaced therefrom by a narrow annular gap; and

liquid metal supply means in flow communication with said brush means for supplying liquid metal thereto; said liquid metal filling the interstices of said porous, liquid metal-permeable material and flowing therethrough to fill said gap between said brush means and said rotor collector ring, thereby establishing electrical contact between said rotor collector ring and said brush means.

4,266,155

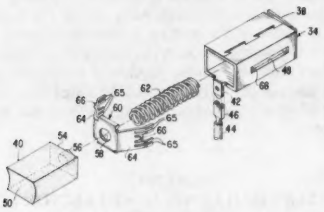
BRUSH HOLDER ASSEMBLY

Paul W. Niemela, Pickens, S.C., assignor to The Singer Company, Stamford, Conn.

Filed Sep. 10, 1979, Ser. No. 73,961
Int. Cl.³ H02K 13/00
U.S. Cl. 310—239 4 Claims

1. Brush holder assembly comprising a conductive tubular brush tube provided with a pair of slots extending longitudinally on opposite sides thereof; a follower of conductive material slidably contained within said brush tube and having a pair of outwardly extending spring legs each slitted longitudinally rearwardly to provide at least three trailing fingers defining at least a pair of outer fingers conductively engaging said brush tube and a central finger bent to form outwardly extending trailing tabs engaged within said slots; a compression spring

confined behind said follower urging said follower towards engagement of said tab against the forward ends of said slots to



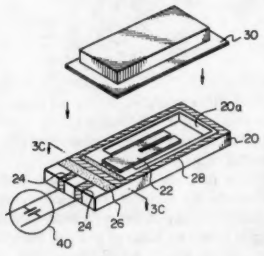
provide positive stops preventing said follower from moving further outwardly of said brush tube; and a brush carried by said follower extending oppositely from said spring.

4,266,156

SUBMINIATURE PIEZOELECTRIC QUARTZ VIBRATOR

Shigeru Kizaki, Hanno, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Nov. 7, 1978, Ser. No. 958,853
Claims priority, application Japan, Nov. 15, 1977, 52-136843
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—344 **8 Claims**



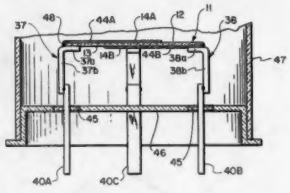
1. A piezoelectric vibrator comprising:
an insulating substrate having a recessed portion formed on an upper side thereof;
thin film leads formed on a portion of said upper side of the insulating substrate;
a piezoelectric vibrator element mounted on a periphery of said recessed portion of said upper side of the insulating substrate and separated by fixed distances from surfaces of said recessed portion, said piezoelectric vibrator element being electrically connected to said thin film leads;
an insulating layer formed on and partially covering said thin film leads and areas of said upper side of said insulating substrate adjacent to said thin film leads;
a metallized layer formed on the upper side of said insulating substrate and over a part of said insulating layer;
a cover mounted on said metallized layer to enclose said piezoelectric vibrating element; and
a layer of fusible metallic material fused between said metallized layer and said cover, for attaching said cover to said metallized layer and for hermetically sealing said piezoelectric vibrator element within said cover;
said insulating layer having a thickness less than 200 microns, with the thickness of said insulating layer being less than ½ the width of each of said thin film leads, whereby a capacitance develops at each of intermediate portions between said metallized layer and said thin film leads.

4,266,157

PIEZOELECTRIC RESONATOR ASSEMBLY WITH THIN MOLYBDENUM MOUNTING CLIPS

R. Donald Peters, Pinellas Park, Fla., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 18, 1979, Ser. No. 40,361
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—353 **5 Claims**



1. In a resonator assembly including a piezoelectric resonator blank capable of vibrating at a predetermined rate in response to electrical energy applied to electrodes attached to the major faces, the improvement comprising
at least three substantially identical spaced molybdenum electrically conductive clips having a width of the order of thirty times the thickness disposed about the periphery of said resonator blank for mounting said resonator blank at a plurality of spaced regions around said blank;
each of said clips including a first portion parallel to said major faces, said first portions lying in a common plane, said resonator blank being mounted only atop the first portion of all of said clips;
each of said clips further including a second portion of thickness equal to or less than the thickness of said resonator blank disposed perpendicular to said major faces and providing relatively rigid support for said resonator blank in the direction normal to said major faces while being relatively flexible in directions parallel to said major faces for minimization of radial stresses applied to said resonator blank; and an electrically conductive polymide loaded with electrically conductive particles disposed between the first portion of each of the clips and the juxtaposed major surface of said crystal blank for bonding said resonator blank to said clips and along the edge of said resonator blank to establish an electrically conductive path between a given one of said electrodes and at least one corresponding clip.

4,266,158

CATHODE RAY TUBE SOCKET WITH A SPARK GAP

Masayuki Uda, Osaka, and Yoshiichi Hayakawa, Higashiosaka, both of Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

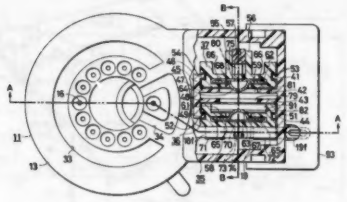
Filed May 7, 1979, Ser. No. 36,704
Claims priority, application Japan, May 10, 1978, 53-62219[U]
Int. Cl.³ H01J *17/00, 21/00*
U.S. Cl. 313—325 **8 Claims**

1. A cathode ray tube socket with a spark gap, comprising:
a disc-like body made of an insulating material;
a plurality of contacts supported by said disc-like body for connection with terminal pins of a cathode ray tube;
a spark gap chamber formed integrally with said disc-like body;
a pair of electrode holders made of an insulating material and housed in said chamber in opposing relationship to one another;
means defining a plurality of depressions and projections on both sides of said electrode holders in slidable engagement with one another for removably supporting said electrode

holders in said opposing relation to one another within said chamber; and

a pair of opposing electrode plates respectively fitted into slit-like depressions formed in said pair of electrode holders, one of said electrode plates being electrically connected to a high-voltage one of said contacts;

said electrode plates including a pair of dome-shaped elec-



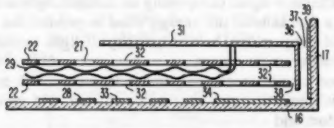
trode portions which are respectively formed integrally with said electrode plates, said pair of dome-shaped electrode portions projecting outwardly of the planes of their respective electrode plates and towards each other through openings which are respectively formed in said electrode holders in communication with said slit-like depressions, thereby to define a spark gap in said chamber between said dome-shaped electrode portions.

4,266,159

ELECTRON CURRENT COLLECTOR FOR FLAT PANEL DISPLAY DEVICES

Wieslaw W. Siekanowicz, Lawrenceville, N.J., assignor to RCA Corp., New York, N.Y.

Filed Sep. 28, 1979, Ser. No. 80,104
Int. Cl.³ H01J *29/08*
U.S. Cl. 313—422 **15 Claims**



1. In a flat panel display device having a display area where the impact of electrons effects a visual display, and including a plurality of spaced beam guides for propagating and focusing electron beams, said beam guides including extraction apertures through which said electron beams pass to impact said display area, said display device also including extraction electrodes for repelling said electron beams through said extraction apertures, an improvement comprising:

an electron collector arranged substantially parallel to the plane of said beam guides and spaced from said beam guides on the display area side of said beam guides;

a deflection electrode in the plane of said extraction electrodes and substantially parallel to the plane of said beam guides;

said beam guides having an extended propagation and focusing portion extending beyond said display area and arranged between said electron collector and said deflection electrode so electron beams are focused between said collector and said deflection electrode, said extended portion including at least one collection aperture so that said deflection electrode causes said electron beams to pass through said collection aperture and impact said collector.

4,266,160

STRONTIUM-CALCIUM FLUORAPATITE PHOSPHORS AND FLUORESCENT LAMP CONTAINING THE SAME

Charles F. Chenot, Towanda, Pa., assignor to GTE Products Corporation, Stamford, Conn.

Filed Jun. 22, 1979, Ser. No. 51,307
Int. Cl.³ C09K *11/44;* H01J *61/44*
U.S. Cl. 313—486 **6 Claims**

1. A luminescent composition consisting essentially of manganese and antimony activated strontium-calcium mixed cation fluorapatite compositions having the formula

$$Ca_{5.0-a-w-x-y}Sr_aCd_wMn_xSb_y(PO_4)_3F_{1-y}O_y$$

wherein

a is from about 0.25 to about 4.75−w−x−y

w is from 0 to about 0.2

x is from about 0.05 to about 0.5

y is from about 0.02 to about 0.2

5. A fluorescent lamp comprising a light-transmitting envelope having electrodes, an inert ionizable gas and a charge of mercury therein and a coating of phosphor on the inside surfaces of said envelopes, said phosphor comprising manganese and antimony activated strontium-calcium mixed cation fluorapatite compositions having the formula,

$$Ca_{5.0-a-w-x-y}Sr_aCd_wMn_xSb_x(PO_4)_3F_{1-y}O_y$$

wherein

a is from about 0.25 to about 4.75−w−x−y

w is from about 0 to about 0.2

x is from about 0.05 to about 0.5

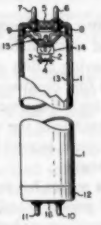
y is from about 0.02 to about 0.2

4,266,161

COOL WHITE LAMP USING A TWO-COMPONENT PHOSPHOR

Anthony F. Kasenga, and Charles F. Chenot, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 22, 1979, Ser. No. 51,304
Int. Cl.³ C09K *11/12, 11/24, 11/42;* H01J *61/44*
U.S. Cl. 313—487 **3 Claims**



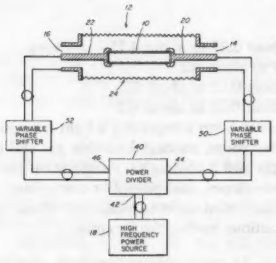
1. A fluorescent lamp comprising a sealed envelope, electrodes, a filling of an inert gas, and mercury therein, and a coating of a phosphor component on the inside surface of said envelope, characterized in that said phosphor component consisting essentially of from about 1 to about 60 weight percent of a blue emitting phosphor having the formula, $(Sr_{1-x}Ba_x)_{5-y}Eu_yCl(PO_4)_3$, wherein x is from 0.01 to about 0.62 and y is from about 0.005 to about 0.15, the balance being a yellow emitting phosphor composition having the formula, $[Ca_{1-a}Sr_a]_5$—w—x—y $Cd_wMn_xSb_y(PO_4)_3F_{1-y}O_y$, a is from 0 to about 0.8, w is from 0 to about 0.05, x is from about 0.005 to about 0.17, y is from about 0.02 to about 0.04, said lamp exhibiting a color falling within the cool white ellipse on the CIE diagram.

4,266,162

ELECTROMAGNETIC DISCHARGE APPARATUS WITH DOUBLE-ENDED POWER COUPLING

William H. McNeill, Carlisle; Alfred E. Feuersanger, Framingham; Paul O. Haugsjaa, Acton, and Robert J. Regan, Needham, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Mar. 16, 1979, Ser. No. 21,125
Int. Cl.[3] H01J 7/46, 11/80
U.S. Cl. 315—39 15 Claims



1. An electromagnetic discharge apparatus comprising:

electrodeless discharge means including a discharge vessel having a first end and a second end and containing a fill material which supports electromagnetic discharge;

a power coupling fixture operative to couple high frequency power to both ends of said electrodeless discharge means so that said discharge means forms a termination load for said fixture during operation, said power coupling fixture including

a first conductor having a first end coupled to the first end of said discharge vessel and a second end,

a second conductor having a first end coupled to the second end of said discharge vessel and a second end, and

an outer conductor disposed around said first and second conductors and said electrodeless discharge means, said outer conductor having a first end associated with the second end of said first conductor to form a first input for receiving said high frequency power and having a second end associated with the second end of said second conductor to form a second input for receiving said high frequency power;

first transmission circuit means having an output coupled to the first input of said power coupling fixture;

second transmission circuit means having an output coupled to the second input of said power coupling fixture;

power divider means having a first output coupled to an input of said first transmission circuit means, a second output coupled to an input of said second transmission circuit means; and

a high frequency power source, coupled to an input of said power divider means, which delivers high frequency power having an associated wavelength,

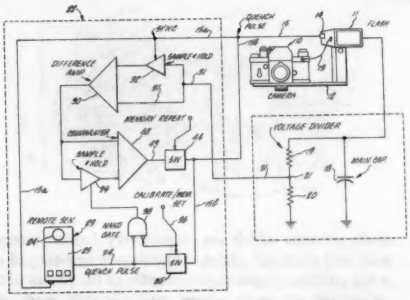
said first transmission circuit means, said first conductor, said electrodeless discharge means, said second conductor, said second transmission circuit means, and said power divider means between said first and second outputs forming an electrical loop having an associated electrical length, which is substantially equal to an integral number of said wavelengths.

4,266,163

INCIDENT METERING ELECTRONIC FLASH CONTROL

Havelock D. Lloyd, Los Angeles, Calif., assignor to Vivitar Corporation, Santa Monica, Calif.

Filed Jul. 9, 1979, Ser. No. 55,539
Int. Cl.[3] H05B 41/32
U.S. Cl. 315—151 15 Claims



1. An electronic flash control system for enabling incident light measurements to be made at a scene to be photographed and a signal to be stored which is proportional to the desired quantity of light received at the scene for automatically controlling quench of an electronic flash unit when taking a subsequent flash picture comprising,

remote sensor means for measuring incident light at a scene, said remote sensor means comprising a light sensor circuit responsive to a control signal for measuring the incident light and providing a quench signal for causing termination of a flash of light from an electronic flash unit,

first circuit means for receiving a signal proportional to the energy used in firing a flashtube of a flash unit, said first circuit means including storage means for storing the initial value of said energy and providing as an output a difference signal comprising an incident light value which is a function of the energy used in production of a flash and proportional to the quantity of light incident on the remote sensor means,

second circuit means responsive to the quench signal from said remote sensor means for storing said incident light value, and

said first and second circuit means being adapted to respond to the initiation of a subsequent flash of light from a flash unit for again measuring the then existing initial value of said energy and providing another quench signal when a new difference signal generated by said first circuit means bears a predetermined relationship to said incident light value.

4,266,164

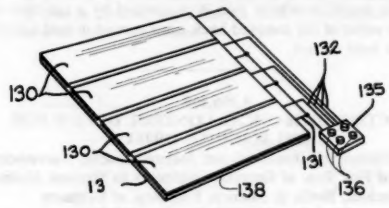
ELECTROLUMINESCENT BACKING SHEET FOR READING AND WRITING IN THE DARK

Becky J. Schroeder, 2317 Valleybrook Dr., Toledo, Ohio 43615

Continuation-in-part of Ser. No. 796,896, May 16, 1977, abandoned, which is a continuation-in-part of Ser. No. 639,200, Dec. 9, 1975, Pat. No. 4,024,404, which is a continuation-in-part of Ser. No. 567,397, Apr. 11, 1975, Pat. No. 3,978,340, which is a continuation-in-part of Ser. No. 498,705, Aug. 19, 1974, Pat. No. 3,879,611, which is a continuation-in-part of Ser. No. 428,339, Dec. 23, 1973, Pat. No. 3,832,556, which is a continuation of Ser. No. 288,148, Sep. 11, 1972, abandoned. This application Mar. 15, 1979, Ser. No. 20,628
Int. Cl.[3] H05B 33/08
U.S. Cl. 315—169.1 6 Claims

1. An electroluminescent panel assembly for writing in darkness comprising a plurality of independently activatable elec-

trically energizable light emitting phosphorescent strips aligned in side-by-side relation to form an integrated luminescent field and a power source connected for energization of each of said light strips, said strips each being arranged to provide a segment of said luminescent field spaced a small distance from the segment of light field of an adjacent strip in



said integrated field forming a series of narrow non-lighted regions therebetween which function as dark guidelines for an overlying sheet of material through which said luminescent field is visible upon energization of said strips,

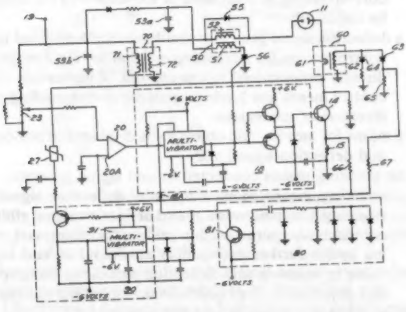
said panel assembly being a self-contained portable unit incorporating its own power source.

4,266,165

HIGH INTENSITY DISCHARGE LAMP STARTING CIRCUIT

Howard Handler, Westminster, Calif., assignor to Datapower, Inc., Santa Ana, Calif.

Filed Dec. 27, 1978, Ser. No. 973,613
Int. Cl.³ H05B *41/14, 41/36*
U.S. Cl. 315—224 **18 Claims**



2. A control circuit for energizing a gas discharge lamp, comprising:

switching means alternately generating a charging current and a flyback current in opposite directions connected across said lamp for sustaining and controlling illumination in said lamp;

pulse transformer means connected in series with said lamp for initially igniting said lamp; and

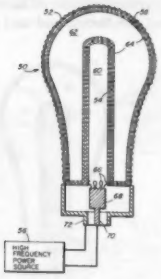
means for automatically preventing the magnetic field in said pulse transformer means from opposing current flow through said lamp.

4,266,166

COMPACT FLUORESCENT LIGHT SOURCE HAVING METALLIZED ELECTRODES

Joseph M. Proud, Wellesley Hills, and Robert K. Smith, Wilmington, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Nov. 9, 1979, Ser. No. 92,914
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—248 **36 Claims**



1. An electromagnetic discharge apparatus for capacitive excitation of a low pressure discharge by high frequency power, said apparatus comprising:

a discharge lamp having a lamp envelope made of a light transmitting substance, said envelope including an outer surface and at least one re-entrant cavity having an inner surface and enclosing a fill material which forms during discharge a plasma which emits ultraviolet radiation and has an effective electrical impedance;

an outer conductor disposed around the outer surface of said envelope such that said outer conductor and said plasma act as a first electrode pair, separated by said lamp envelope, of a first capacitor which is configured to have an impedance at said high frequency which is much less than the impedance of said plasma;

a conductive coating disposed on the inner surface of said re-entrant cavity to form an inner conductor such that said inner conductor and said plasma act as a second electrode pair, separated by said lamp envelope, of a second capacitor which is configured to have an impedance at said high frequency which is much less than the impedance of said plasma,

means for coupling said apparatus to a source of high frequency power, said inner and outer conductors being positioned so that when a high frequency voltage is applied between said inner and outer conductors, inducing an electric field therebetween, substantially all of said electric field is confined within said discharge lamp,

whereby high frequency power applied to said inner and outer conductors induces an electric field in said lamp and causes discharge therein.

4,266,167

COMPACT FLUORESCENT LIGHT SOURCE AND METHOD OF EXCITATION THEREOF

Joseph M. Proud, Wellesley Hills, and Donald H. Baird, Newton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

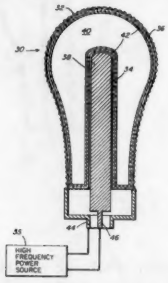
Filed Nov. 9, 1979, Ser. No. 92,916
Int. Cl.³ H05B *41/16, 41/24*
U.S. Cl. 315—248 **40 Claims**

1. A method for capacitive excitation, by high frequency power, of a low pressure discharge in a discharge lamp having a lamp envelope made of a light transmitting substance, said envelope enclosing a fill material which forms during discharge a plasma which emits ultraviolet radiation and has an

effective electrical impedance, said method comprising the steps of:

positioning a first conductor in close proximity to a first external surface region of said discharge lamp such that said first conductor and said plasma act as a first electrode pair, separated by said lamp envelope, of a first capacitor which is configured to have an impedance, at said high frequency, which is much less than the impedance of said plasma;

positioning a second conductor in close proximity to a second external surface region of said discharge lamp such that said second conductor and said plasma act as a second



electrode pair, separated by said lamp envelope, of a second capacitor which is configured to have an impedance, at said high frequency, which is much less than the impedance of said plasma;

positioning said first and second conductors relative to each other so that, when a high frequency voltage is applied between said first and second conductors, inducing an electric field therebetween, substantially all of said electric field is confined within said discharge lamp; and

applying high frequency power to said first and second conductors for inducing an electric field in said lamp and causing discharge therein.

4,266,168

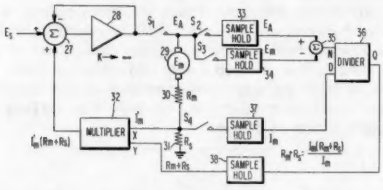
D.C. MOTOR SPEED CONTROL

Jorgen W. Andersen, 3030 Rey Rd., Mathews, N.C. 28105

Filed Jun. 12, 1979, Ser. No. 47,699

Int. Cl.[3] H02P *5/16*

U.S. Cl. 318—331 **4 Claims**



1. In a D.C. motor speed control of the type wherein a set point voltage is applied to a loop summing junction to develop an error voltage which is amplified by an error amplifier and applied across the D.C. motor to be controlled, and a current metering device is connected in series with said D.C. motor to develop a voltage proportional to the current through said D.C. motor, which voltage is amplified by a second amplifier and positively fed back to said summing junction, the improvement comprising:

a first normally closed switch connected between said error amplifier and said D.C. motor,

a sample and hold circuit including a second normally open switch connected to said D.C. motor, said first and second switches being operated synchronously so that when said first switch is momentarily opened, said second switch is momentarily closed to sample the back e.m.f. of said D.C. motor, the value of the sampled back e.m.f. being stored in said sample and hold circuit, and

said second amplifier being a voltage controlled variable gain amplifier whose gain is controlled by a function of the value of the sampled back e.m.f. stored in said sample and hold circuit.

4,266,169

ELECTROMECHANICAL CONTROL DEVICE FOR DISPLACING AN OBJECT

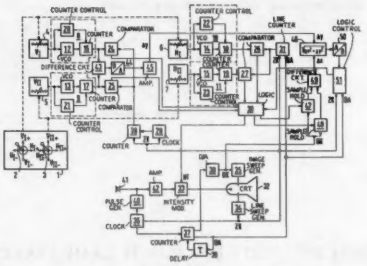
Georg Hölzler, Moehrendorf, and Jochem Knoche, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 24, 1980, Ser. No. 115,001

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1979, 2910012

Int. Cl.[3] G06F *3/14*

U.S. Cl. 318—490 **8 Claims**



1. An electromechanical positioning device for generating electric signals to displace an object from an initial position to a selected final position comprising:

a manually operable control means normally maintained in a rest position, said control means moveable in directions corresponding to directions of movement of the object to be displaced;

a deflection signal generator mechanically connected to said control means for generating a signal having a magnitude directly proportional to the amount of movement of said control means and having a polarity corresponding to the direction of movement;

a means for moving said object to be displaced in response to said deflection signal; and

an arresting means connected to said signal generator, said arresting means monitoring said deflection signal and retaining a highest value of said deflection signal after said control means is returned to said rest position, said arresting means further maintaining an output at said highest value to maintain said deflection signal and thereby hold said object in the final position corresponding thereto with said control means in said rest position.

4,266,170

SAFETY ARRANGEMENT FOR NC SYSTEMS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Kanagawaken, Japan

Filed Aug. 21, 1979, Ser. No. 68,498

Claims priority, application Japan, Sep. 6, 1978, 53-122591[U]

Int. Cl.[3] G05B *23/02*

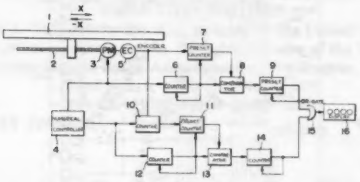
U.S. Cl. 318—565 **7 Claims**

1. A safety arrangement for an electromechanical system in a machine tool for controlledly feeding a movable element

driven by an electric motor in accordance with a programmed instruction from a numerical controller, wherein a drive signal is applied from said numerical controller to said motor to angularly displace the same, the arrangement comprising:

encoder means responsive to the angular displacement of said motor to provide a sensing signal;

means responsive to said drive signal and said sensing signal to provide a first detection signal in the presence of a deviation therebetween during each of successive predetermined time intervals;



means responsive to said numerical controller for registering a predetermined extent of angular displacement of said motor to be effected by said drive signal in each of successive, divided displacement steps for said movable element;

means having said registered extent set therein and responsive to said sensing signal to provide a second detection signal when said registered extent fails to be reached by said sensing signal in any of a predetermined sequential number of said successive displacement steps; and

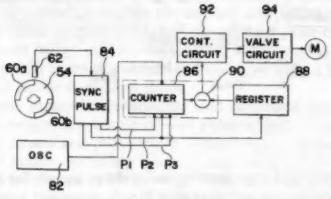
means for deriving an error signal from said first and second detection signals.

4,266,171

ADVANCE CONTROL SYSTEM FOR USE IN A DRILLING APPARATUS

Tohru Mashimo, Hiroshima, Japan, assignor to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Apr. 3, 1979, Ser. No. 27,013
Claims priority, application Japan, Apr. 5, 1978, 53-40576
Int. Cl.³ G05B *19/24*
U.S. Cl. 318—571 **5 Claims**



1. A control system for use in a drilling apparatus including a drilling rod rotatably accommodated in a drilling body and moving means for advancing and retreating said body in relation to an object, said controlling system comprising:

pulse producing means for producing one or two pulses upon completion of each rotation of the drilling rod;

oscillator means for producing a high frequency pulse signal;

counting means for counting the number of high frequency pulses produced during a period defined by pulses produced from the pulse producing means; and

control means for controlling the moving means by the counted number of pulses;

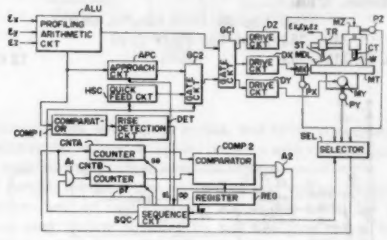
wherein said control means comprises a reference number producing means for producing a reference member, a comparator means for comparing the counted number in the counting means with the reference number and for producing a difference therebetween, means for classifying the difference into one of a plurality of classes, means for producing a class signal indicative of a class in which the difference is classified and control circuit responsive to the class signal for controlling the moving means.

4,266,172

TRACER CONTROL SYSTEM

Etuo Yamazaki, Hachioji, Japan, assignor to Fujitsu Fanuc Limited, Japan

Filed Apr. 23, 1979, Ser. No. 32,695
Claims priority, application Japan, Apr. 24, 1978, 53/49065
Int. Cl.³ G05B *19/37*
U.S. Cl. 318—578 **9 Claims**



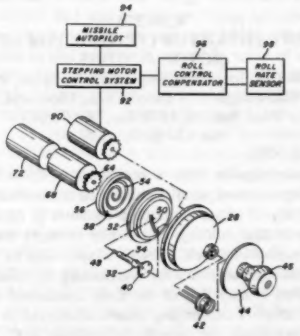
1. A tracer control system in which a tracer head quick feed operation is switched over to a deceleration operation to alleviate a shock when a stylus of the tracer head contacts a model, wherein the improvement comprises means for detecting and storing the amount of change in the configuration of a model at a profiling start point, said means employed to control the point of switching from the tracer head quick feed operation to the deceleration operation for the next profiling start point, said point of switching dependent upon said stored amount of change, thereby ensuring that the point of switching is always at substantially a constant distance above the profiling start point on the model surface.

4,266,173

ROLL COMPENSATED SEEKER HEAD

Larry D. McTigue, and George T. Pinson, both of Huntsville, Ala., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 15, 1979, Ser. No. 20,577
Int. Cl.³ B64C *13/18*
U.S. Cl. 318—585 **6 Claims**



1. In an aircraft subject to rolling motions about its longitudinal axis, the combination of apparatus for mounting on said aircraft a sensor adapted to search an area in two dimensions for a target located at some unknown point, a roll rate gyro for sensing rolling movements of said aircraft about said longitudi-

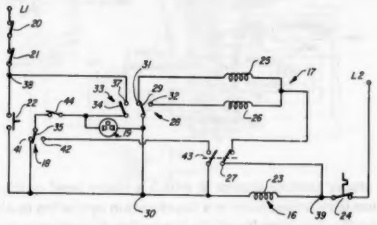
nal axis, and means including a roll control compensator coupled to said roll rate gyro for rotating said mounting apparatus about said longitudinal axis in an amount substantially equal and opposite to the rolling movement sensed by said roll rate gyro, the amount of movement of said mounting means by said rotating means being as great as 360°.

4,266,174

COMPACTOR CONTROL WITH SELECTIVE PAUSE OPERATION

Frank E. Miller, Mercer County, Ky., and James J. Anderson, Fremont, Ohio, assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Aug. 23, 1979, Ser. No. 68,972
Int. Cl.³ H02P *1/40*
U.S. Cl. 318—753 **12 Claims**



1. In a refuse compactor having a compacting ram, drive means for driving the ram selectively in a compacting movement to a compacting position and in a retracting movement to a retracted position, the improvement comprising:

control means controlling the drive means for selectively

(a) causing the ram to be returned to said retracted position as an incident of the ram meeting a preselected resistance to compacting movement, and

(b) causing the ram to be retained in said compacting position upon the ram meeting said preselected resistance;

means for causing the control means to return the ram to said retracted position subsequent to the ram being caused to be retained in said compacting position; and

indicator means indicating the retention of the ram in said compacting position.

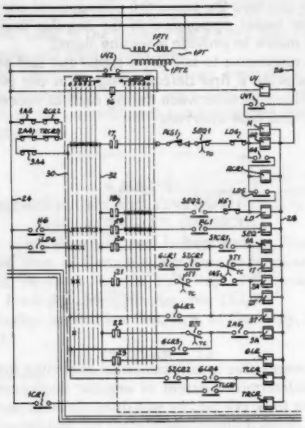
4,266,175

SECONDARY THYRISTOR CONTROL FOR AC WOUND ROTOR MOTORS

Dennis H. Braun, Brookfield, and Robert W. Spink, Wauwatosa, both of Wis., assignors to Eaton Corp., Cleveland, Ohio

Filed Sep. 24, 1979, Ser. No. 78,063
Int. Cl.³ H02P *1/40*
U.S. Cl. 318—758 **15 Claims**

1. The combination with a polyphase A.C. wound rotor motor having opposed parallel connected controlled thyristors and a plurality of series connected resistors in each leg of a delta connected secondary impedance network and control means for establishing A.C. power connections to the motor primary terminals, of means for controlling the conduction of said thyristors in each leg of the delta connected secondary impedance network comprising means connected to the motor secondary terminals to provide polyphase A.C. reference signals which vary in frequency and amplitude in accordance with motor primary excitation, speed and load, means responsive to said A.C. reference signals providing polyphase complementary constant peak amplitude, variable frequency signals which are impervious to erroneous multiple zero crossings of said A.C. reference signals, means providing a selectively settable reference signal, and means responsive to the last mentioned reference signal and said polyphase complementary



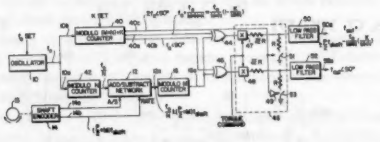
constant peak amplitude variable frequency signals to provide timed gating signals for initiating conduction of said thyristors.

4,266,176

INDUCTION MOTOR SLIP FREQUENCY CONTROLLER

Donald E. Fulton, Stoneham, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Aug. 29, 1979, Ser. No. 70,856
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—801 **28 Claims**



1. Apparatus for generating stator drive signals for an induction motor having a stator with P pole pairs and a rotor coupled to an output shaft, said output shaft having a rotational frequency, f_{shaft}, comprising:

A. oscillator means for generating a first pulse stream having a pulse repetition rate (prf) f_o/N, where N is an integer constant,

B. incremental shaft position transducer means coupled to said shaft, for generating a pulse for each predetermined increment of rotation of said shaft, said pulses forming a second pulse stream having a prf $P/2 \times M \times f_{shaft}$, when M is an integer constant,

C. pulse frequency adder/substractor means coupled to said oscillator means and said transducer means, for generating a third pulse stream having a prf equal to the sum or difference of the prf's of said first and second pulse streams,

D. means coupled to said adder/substractor means, for generating a fourth pulse stream having a prf equal to the product of 1/M and the prf of said third pulse stream,

E. means of generating a fifth pulse stream having a prf equal

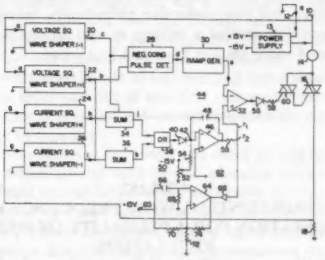
to $f_o/(M \times N) + \Delta f_{slip}$ where Δf_{slip} is a selected value corresponding to a desired slip frequency,

F. difference means coupled to said fourth and fifth pulse stream generating means, for generating said stator drive signals, said stator drive signals having a frequency equal to the difference between the prf's of said fourth and fifth pulse streams.

4,266,177
POWER FACTOR CONTROL SYSTEM FOR AC INDUCTION MOTORS

Frank J. Nola, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 1, 1979, Ser. No. 44,431
Int. Cl.[3] H02K *17/04*; H02P *5/40*
U.S. Cl. 318—810 **9 Claims**



1. A power factor control system for an AC induction motor comprising:

current sampling means including means adapted to be placed in circuit with a winding of a said motor for providing a rectangular output signal timed to turn on responsive to detected current flow through said winding;

voltage sampling means adapted to sense the voltage of an electrical input applied to said winding and for providing a rectangular wave output signal timed to change with changes in polarity of said voltage across said winding;

summing means for adding the current and voltage rectangular wave output signals and providing a pulse output of constant height and having a duration proportional to the phase difference of current and voltage;

a power factor command signal;

difference means for subtracting said command signal from an averaged amplitude of said pulse output of said summing means and providing a difference signal; and

control means, including a signal responsive switch electrically connected in series with a said winding of said motor, and responsive to said difference signal for varying the duration of "on" time of said switch during each cycle of input power to a said winding as a direct function of load on said motor.

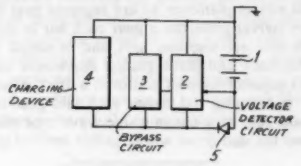
4,266,178
CHARGE CONTROL CIRCUIT

Tatsushi Asakawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 5, 1977, Ser. No. 839,522
Claims priority, application Japan, Oct. 5, 1976, 51-119641
Int. Cl.[3] H02J *7/10*
U.S. Cl. 320—39 **24 Claims**

1. A charge control circuit comprising voltage supply means adapted to be charged to a predetermined voltage level in response to a charging circuit being applied thereto; charging means adapted to produce a charging current; voltage regulating means disposed intermediate said charging means and said voltage supply means; circuit isolation means for preventing any current flow caused by said voltage supply means, whereby all circuit currents are exclusively supplied from said charging means,

said voltage regulating means including voltage detecting means for detecting when said voltage supply means is charged to said predetermined level and in response thereto for producing an inhibit signal, said detecting means being responsive solely to voltage and drawing no



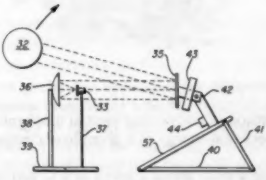
current from said supply means, and being connected to receive the voltage at a point between said voltage supply means and said circuit isolation means;

and current inhibit means coupled to said voltage detecting means and to said charging means for inhibiting said charging current supplied by said charging means from being supplied to said voltage supply means when said inhibit signal is applied thereto.

4,266,179
SOLAR ENERGY CONCENTRATION SYSTEM

James E. Hamm, Jr., 11824 Kim Pl., Potomac, Md. 20854

Filed Feb. 27, 1979, Ser. No. 15,858
Int. Cl.[3] F24J *3/02*; H01J *45/00*
U.S. Cl. 322—2 R **18 Claims**



1. In a solar radiant energy concentration system: a reflective concentrator; a thermionic energy conversion transducer; said concentrator and said transducer being mounted in fixed relation to each other; reflector means positioned for reflecting solar radiation to said concentrator and focusing of solar radiation from said concentrator to said transducer; position setting means; tracking means for reflector means tracking of the sun during daylight hours of the day; wherein said reflector means is a plurality of reflectors each positioned for reflecting solar radiation to said concentrator; and at least one reflector of said plurality of reflectors mounted on each of a plurality of declination adjustor support platforms; said position setting means includes a one-time declination-latitude position setting structure for each of said declination adjustor support platforms; each said position setting structure includes declination adjustor support means set at an inclination angle compensating for the latitude of the system location; said concentrator and said transducer are mounted in substantially North-South orientation with said concentrator generally closer to the equator than said transducer; said declination adjustor support means is in the form of a platform with pivotal interconnect means at one end with mounting means and having inclination angle setting means supporting said platform at a declination angle with declination angle setting lock means; with positioning of said declination adjustor means in substantially a North-South orientation at site location with said platform interconnect

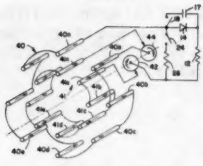
means at the end of said platform being located toward the equator; a declination adjustment device is mounted on each of said declination adjustor support platforms; said declination adjustment device is constructed with the declination adjustment range of 47 degrees movement corresponding to the yearly relationship of the earth to sun North-South-North rotation movement of 47 degrees to eliminate the offset caused by the declination angle of the earth's axis; and wherein said declination adjustment device includes a pivotally mounted declination swivel platform; an arc segment gear fixed to said declination swivel platform; a gear rack bar in drive engagement with said arc segment gear and mounted for slidable longitudinal back and forth guided movement on each said declination adjustor support platform; a drive wheel interconnected by connecting rod means with said gear rack bar for drive of said gear rack bar in a sine wave type plot; and step drive means for said drive wheel.

4,266,180

METHOD OF AND MEANS FOR HIGH PERFORMANCE DIRECT CURRENT ELECTRICAL PULSE GENERATION UTILIZING MECHANICAL ENERGY STORAGE

Christian H. A. Juvan, Cupertino, Calif., assignor to ILC Technology, Inc., Sunnyvale, Calif.

Filed Jun. 21, 1979, Ser. No. 50,756
Int. Cl.[3] H02K *39/00*
U.S. Cl. 322—4 **41 Claims**



1. The method of converting inertial mechanical energy into a pulse of electrical energy in a given load comprising the steps of:

(a) rotating a mass about a given axis to provide a source of inertial mechanical energy;

(b) providing an electrical conductor means adapted to produce a localized magnetic field at the surface of said rotary mass by electrical current flow therethrough;

(c) providing a localized magnetic flux compression means at the surface of said rotating mass;

(d) rotating one of said electrical conductor means and said magnetic flux compression means with said rotating mass to periodically compress the flux of said localized magnetic field in response to said rotation of said mass; and

(e) connecting said given load across said electrical conductor means during said compression of said flux of said localized magnetic field.

4,266,181

VOLTAGE REGULATOR SYSTEM FOR VEHICLE GENERATOR

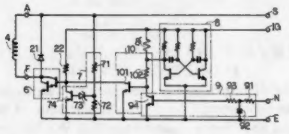
Katsuya Muto, Kariya; Kazumasa Mori, Aichi; Akira Mase, Handa; Takayasu Nimura, Nagoya; Katsumi Itoh, Obu, and Yoshio Akita, Ichinomiya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 5, 1979, Ser. No. 9,359
Claims priority, application Japan, Apr. 21, 1978, 53-48205
Int. Cl.[3] H02P *9/08*
U.S. Cl. 322—28 **8 Claims**

1. A voltage regulator for battery charging generator having armature windings and a field exciting coil comprising:

a switching circuit connected in series with the field exciting coil for supplying field exciting current by the conduction thereof,

a battery voltage sensing circuit for causing said switching circuit to be nonconductive when a sensed battery voltage exceeds a first value to regulate the battery charging voltage,



first means connected to the armature windings to detect a voltage in said windings, and

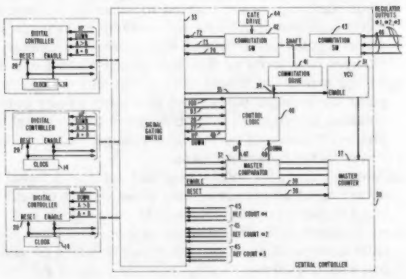
second means for causing said switching circuit to be conductive and nonconductive periodically unless said first means detects that a voltage in said windings exceeds a second value smaller than said first value.

4,266,182

COMMON CONTROL WITH FREQUENCY DRIFT COMPENSATION FOR A PLURALITY OF SWITCHING REGULATORS

Victor B. Boros, New York, N.Y., and Harry K. Ebert, Jr., Hackettstown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 24, 1979, Ser. No. 69,259
Int. Cl.[3] H02P *13/32*
U.S. Cl. 323—267 **8 Claims**



1. A power supply system including at least a first and second switching regulator having a first and second regulatory control circuit including first and second error signal generating circuitry, respectively;

wherein the improvement comprises;

a master regulatory control circuit including a master error signal generating circuit;

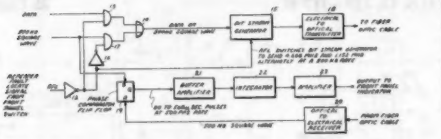
multiplexing means to periodically and sequentially couple the master regulatory control circuit to the first and second switching regulator; and

first and second compensation circuits each responsive to the master error signal generating circuit and each operative to modify an erro signal generated by the first and second error signal generated by the first and second error signal generating circuitry respectively wherein the precision of operation of the first and second switching regulator is enhanced.

4,266,183
FAULT LOCATING ARRANGEMENT FOR A TWO-WAY REPEATERED TRANSMISSION LINK

Peter D. Steensma, Midland Park; Robert H. Haussmann, Wayne, and Anton J. Polcer, Haledon, all of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,439
Int. Cl.³ G01R *31/08*
U.S. Cl. 324—52 **19 Claims**



1. A fault locking arrangement for a two-way repeatered transmission link including first and second spaced two-way terminals and a plurality of two-way repeaters disposed between said first and second terminals comprising:

first means disposed in one of said first and first transmission direction from said one of said first and second terminals to the other of said first and second terminals through said plurality of repeaters;

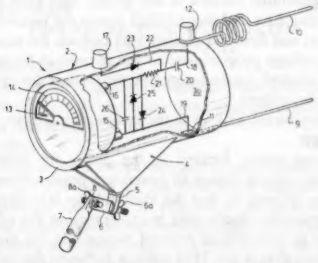
second means disposed in at least said other of said first and second terminals and each of said plurality of repeaters, each of said second means being responsive to said unique signal traveling in said first transmission direction to establish a loop connection for said unique signal from said first transmission direction to a second transmission direction opposite to said first transmission direction, to enable transmission of said unique signal in said first transmission direction beyond an associated one of said plurality of repeaters, to break said loop connection when said unique signal is traveling in said second transmission direction and to maintain said loop connection when said unique signal is not traveling in said second transmission direction; and

third means disposed in said one of said first and second terminals responsive to said unique signal transmitted in said first transmission direction and received from said second transmission direction to provide an indication of the location of a fault in said transmission link.

4,266,184
METHOD AND APPARATUS FOR TESTING INSULATORS

Clifford W. Devine, Box 123, Keremeos, British Columbia, Canada (V0X 1N0)

Filed Jun. 15, 1979, Ser. No. 48,579
Int. Cl.³ G01R *31/12*
U.S. Cl. 324—54 **11 Claims**

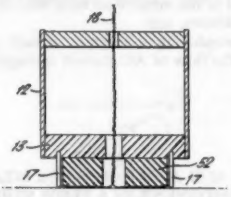


1. A method for detecting faulty insulators among insulators supporting high alternating voltage power transmission lines by means of testing means comprising a capacitance, a blocking resistance, means to avoid discharge of said capacitance, contact probes and a direct current meter which comprises the steps of connecting a source of high voltage direct current to said testing means, charging said capacitance consisting of at least one high voltage, oil filled capacitor from said source, avoiding discharging of the charged capacitor to said source, disconnecting said source from the testing means whereby said testing means has a self contained source of high voltage direct current, sequentially applying the contact probes of said testing means across insulators and recording any current flowing across said insulators by means of said meter, any recorded current being indicative of a faulty insulator, and carrying out the sequential application of the contact probes across insulators while said insulators remain in service and the power transmission lines remain fully energized with normal operating alternating current voltage.

4,266,185
PROBES AND APPARATUS FOR AND METHODS OF MEASURING CRACK DEPTHS

Frank D. W. Charlesworth, South Harrow; William D. Dover, Gerrards Cross, and Kenneth A. Taylor, Knebworth, all of England, assignors to Dover & Partners Limited, London, England

Filed Feb. 16, 1979, Ser. No. 12,796
Int. Cl.³ G01R *27/14*
U.S. Cl. 324—64 **17 Claims**

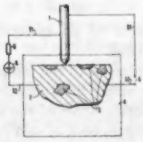


1. An electrical probe for apparatus for measuring crack depths in workpieces, comprising a body, a pair of electrodes mounted on the body at spaced locations thereon each electrode having a contact surface for engaging a work piece, the electrodes being electrically insulated from one another, electric lead means for the respective electrodes, each lead means having an input end and an output end, and means for connecting the input ends of the lead means to the respective electrodes, the lead means and electrodes together constituting a non-inductive circuit and means to connect the output ends of said lead means to a source of alternating current.

4,266,186
METHOD OF TESTING SILICON CONTENT IN ALUMINIUM ALLOYS

Martin Ruhle, Stuttgart, Fed. Rep. of Germany, assignor to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,134
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1978, 2808902
Int. Cl.³ G01R *27/02*
U.S. Cl. 324—65 R **5 Claims**

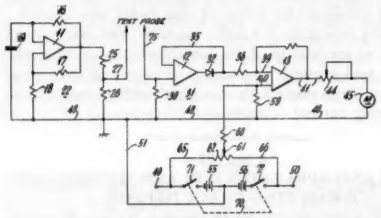


5. A method according to claim 1 wherein the pin point is surrounded by an ambient fluid protective against burning.

4,266,187
METHOD AND APPARATUS FOR MEASURING EFFECTIVENESS OF A CORROSION INHIBITOR

Carlton M. Slough, Spring, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,598
Int. Cl.[3] G01R 27/02
U.S. Cl. 324—65 CR 7 Claims



1. Test instrument for measuring effectiveness of a corrosion inhibitor in a corroding system, comprising

an oscillator for generating an AC signal across a voltage divider,

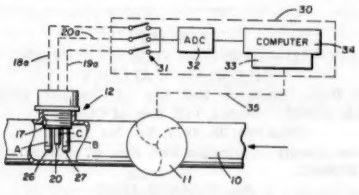
circuit means for connecting a predetermined portion of said AC signal to the input of an ideal rectifier through a film of said inhibitor, and

means for amplifying the output of said ideal rectifier to measure the flow of AC current through said film.

4,266,188
METHOD AND APPARATUS FOR MEASURING A COMPONENT IN A FLOW STREAM

Francis Thompson, Plano, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 30, 1979, Ser. No. 99,239
Int. Cl.[3] G01R 27/02
U.S. Cl. 324—65 R 18 Claims



10. Apparatus for use in measuring the concentration of a particular component in a two-component liquid mixture, said apparatus comprising:

a first means responsive to the temperature and pressure of said two-component liquid mixture for generating a first signal representative of an electrical property of said particular component;

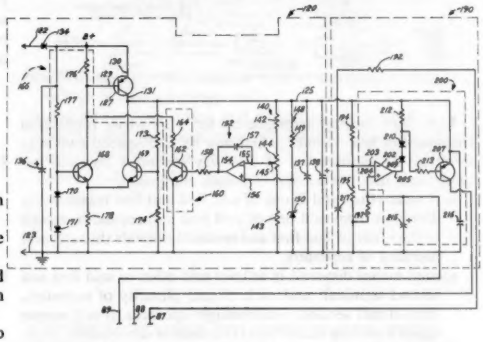
a second means responsive to the temperature and pressure of said two-component liquid mixture for generating a second signal representative of the same electrical property of the other component of said two-component liquid mixture; and

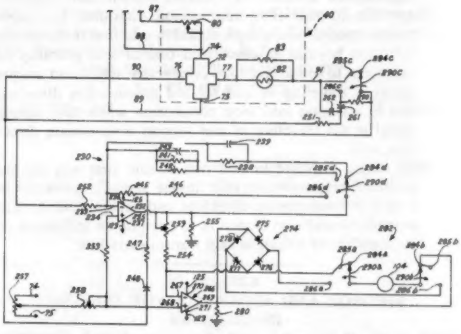
a third means responsive to the temperature and pressure of said two-component liquid mixture for generating a third signal representative of the same electrical property of said two-component liquid mixture.

4,266,189
CURRENT MEASURING APPARATUS AND METHOD

Richard A. Karlin; Robert W. McDonald, both of Chicago, and Gary F. Comiskey, Evanston, all of Ill., assignors to Sun Electric Corporation, Crystal Lake, Ill.

Filed Jul. 28, 1976, Ser. No. 709,458
Int. Cl.[3] G01R 19/00, 1/30, 31/00
U.S. Cl. 324—117 H 25 Claims





1. Apparatus for determining the magnitude of a current to be measured flowing through a conductor, said apparatus comprising:

a probe adapted to be coupled to the conductor;

a cabinet;

a Hall generator located in the probe, said Hall generator including first and second Hall inputs for receiving a bias current and first and second Hall outputs for producing a Hall voltage proportional to the current to be measured;

current control means located in the cabinet for controlling the bias current;

utilization means located in the cabinet for utilizing the Hall voltage;

adjustment means located in the probe for enabling the current control means to generate a predetermined value of bias current, so that the Hall voltage is calibrated; and

cable means for electrically interconnecting the adjustment means to the current control means and for conducting the bias current and Hall voltage between the cabinet and probe, whereby each probe can be individually adjusted by the adjustment means to be interchangeably connected to a variety of cabinets through the cable means.

4,266,190

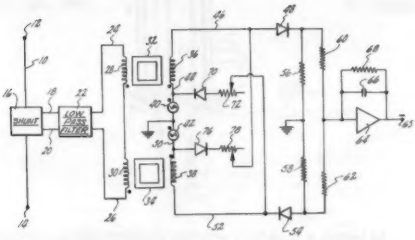
DUAL CORE MAGNETIC AMPLIFIER SENSOR

Kenneth Lipman, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 18, 1978, Ser. No. 970,766

Int. Cl.[3] G01R *33/00*; H03F *9/00*

U.S. Cl. 324—117 R **5 Claims**



1. A magnetic amplifier for sensing the magnitude and polarity of a main current, comprising:

means including a pair of saturable cores, the flux level of which is drivable from an unsaturated state to a saturated state in response to a magnetomotive force in one direction and resettable from the saturated state to an unsaturated state by a magnetomotive force in the opposite direction;

shunt means responsive to said main current for generating a shunt current proportional to said main current to create a magnetomotive force which changes the flux level in each of said saturable cores in one direction;

voltage means for creating a drive magnetomotive force and a reset magnetomotive force within each of said pair of saturable cores for driving the respective flux levels of each core in opposite directions to a saturation point, and for resetting the respective flux levels within each of said saturable cores to a lower level;

bias means connected to said voltage means for initially calibrating the respective flux levels in each of said cores; and

output means for sensing which one of said pair of saturable cores is first to saturate, and for sensing the time separating the saturation points of said saturable cores, and for providing an output signal which has a polarity indicative of the polarity of said main current and a magnitude proportional to said main current.

4,266,191

TEST PROBE ALIGNMENT APPARATUS

John D. Spano, 301 Green Moor Pl., Thousand Oaks, Calif. 91360, and Danny R. Barnett, 3617 W. Abraham La., Glendale, Ariz. 85308

Filed Apr. 18, 1979, Ser. No. 31,192

Int. Cl.[3] G01R *31/22*

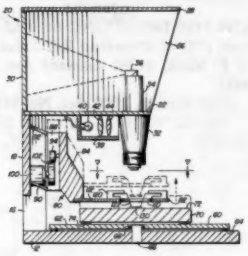
U.S. Cl. 324—158 F **10 Claims**

1. Apparatus for aligning an element having two predetermined indexing points with two fixed alignment points on the apparatus, comprising, in combination:

base means;

a first stage secured to the base means and rotatable thereon, with the first point of the two fixed alignment points disposed on the center of rotation of the first stage;

a second stage disposed on the first stage for supporting the element to be aligned and freely movable on the first stage and adapted for manual alignment of one of the predetermined indexing points of the element with the first fixed alignment point, and movable with the first stage for rotating the first stage and the second stage to align the other of the predetermined indexing points of the element with the second fixed alignment point after the alignment



of the one predetermined indexing point of the element with the first fixed alignment point.

4,266,192

ROTATIONAL SPEED DETECTING APPARATUS

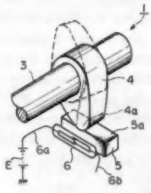
Yoshio Ohtani, Higashimatsuyama, Japan, assignor to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,583

Claims priority, application Japan, Nov. 25, 1977, 52-157497[U]

Int. Cl.[3] G01P *3/48*

U.S. Cl. 324—168 **3 Claims**



1. A rotational speed detecting apparatus for obtaining signals relative to the rotational speed of a rotating member comprising:

a permanent magnet;

means for retaining said permanent magnet in a fixed position relative to said rotating member, said permanent magnet having a face surface facing said rotating member;

said rotating member including a cam having a convex portion which moves towards and away from said face surface of said permanent magnet such that as said convex portion moves away the intensity of the magnetic field on said face surface is decreased and the magnetic resistance gradually becomes uniform around said permanent magnet, whereby the magnetic flux issued from said permanent magnet is distributed uniformly thereform;

a magnetic body which realtively approaches or moves away from said permanent magnet according to the rotational speed of the rotating member;

a magneto-sensitive switch which performs an on-off operation in response to a change of the intensity of the magnetic field produced by the relative motion between said permanent magnet and said magnetic body, said magneto-sensitive switch being arranged adjacent to said permanent magnet, in an integral state;

a direct current voltage source which is connected to said switch so as to produce a pulse signal with a frequency which is varied in accordance with the speed of the on-off operation of said switch;

a differentiation circuit for differentiating the pulse signal; and,

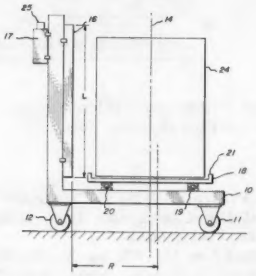
an integration circuit for integrating an output signal produced from said differentiation circuit.

4,266,193

MEANS FOR DETECTING METAL OBJECTS

Lynn W. Most, 1787 N. Rivercrest Rd., Lakeland, Minn. 55043, and Allen F. Most, 11701 Leeward Ave. South, Hastings, Minn. 55033

Filed Sep. 11, 1978, Ser. No. 941,042
Int. Cl.³ G01R *33/12*; G01N *27/72*
U.S. Cl. 324—236 **4 Claims**



1. A device for detecting metallic objects in a container having a substantial quantity of non metal therein, comprising:

a frame having a vertical portion and a horizontal portion;

metal detecting means mounted on said vertical portion of said frame and generating a plane of detection having a length L substantially equal to the length of said detection means and a width extending along said horizontal portion of said frame equal to distance R;

container means for holding a substantial quantity of non metal which might contain metallic objects therein, said container having a length less than or equal to L, and a diameter less than 2R;

rotating support means on said horizontal portion of said frame for positioning said container in said plane of detection for rotation of said container about an axis of rotation parallel to length L and less than distance R from said detecting means; and

alarm means connected to said detecting means for signaling the presence of metallic objects passing through said plane of detection during rotation of said support means.

4,266,194

SENSOR FOR VT PROBES

Lloyd F. Hlavka, Palo Alto, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

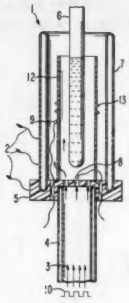
Filed Jul. 23, 1979, Ser. No. 59,820
Int. Cl.³ G01R *33/08*
U.S. Cl. 324—315 **4 Claims**

1. An improved nuclear magnetic resonance spectrometer comprising:

means for applying an alternating RF field and an orthogonal fixed DC magnetic field to a sample under test, said sample being disposed in a first tube which is surrounded by a second tube,

means for introducing and permitting a flowing temperature controlled fluid into the space between said first and second tube, said first tube being configured for spinning in said second tube during operation of said spectrometer, and

means for controlling the temperature of said flowing fluid and said sample, said means for controlling the temperature of said sample including a plurality of sensor means, each said sensor means disposed adjacent said sample and in said fluid flow, said sensor means being interconnected



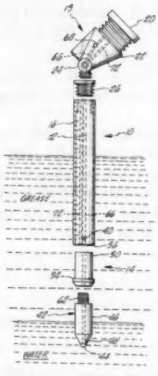
to obtain a weighted average output reading corresponding to the actual temperature of said sample.

4,266,195

WATER DETECTOR

Eugene F. Keefner, 12009 E. 95th St., Cerritos, Calif. 90801, and John R. Keefner, 616 Delaware Ave., Huntington Beach, Calif. 92648

Filed Dec. 27, 1978, Ser. No. 973,717
Int. Cl.³ G01N *27/02*
U.S. Cl. 324—439 **15 Claims**



1. In an apparatus for detecting the presence of an electrically conductive liquid in a medium which is substantially electrically non-conductive, the apparatus comprising (a) a first element having a first electrochemical potential, (b) a second element in electrical contact with the first element, the second element having an electrochemical potential different from the first electrochmeical potential, and (c) means for measuring electrical current generated when at least a portion of the second element is in the electrically conductive medium and the first element is in the medium which is substantially electrically non-conductive, the improvement comprising

a grounding element attached to and supported by the second element, the grounding element being electrically insulated from the first and second elements and being electrically connected to the measuring means.

4,266,196

GAS DETECTING MEANS UTILIZING ELECTRIC DISCHARGE

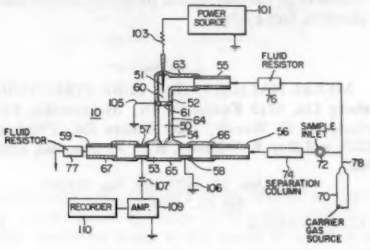
Kazuyoshi Kawazoe, Takahagi; Yoshinori Takata, Ibaraki; Mon Suzuki, Hitachi, and Shizuo Uehara, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 30, 1979, Ser. No. 25,571

Claims priority, application Japan, Mar. 31, 1978, 53/36614

Int. Cl.³ G01N *27/62*

U.S. Cl. 324—464 **27 Claims**



1. A gas ionization detector comprising,

a first chamber;

a second chamber;

means forming a communicating path between said first and second chambers to guide light from said first chamber into said second chamber;

a pointed discharge electrode placed in said first chamber and directed toward said communicating path;

a discharge counter electrode having a penetration hole with a diameter smaller than the spatial cross-section of said communicating path, said discharge counter electrode being disposed between said pointed discharge electrode and said second chamber in such a manner that said penetration hole faces the end of said pointed discharge electrode and forms the inlet for light passing into said communicating path from said first chamber;

an electrical power source connected to said pointed discharge electrode and said discharge counter electrode to establish an electrical discharge therebetween;

means for introducing a discharge gas into said first chamber to effect ionization thereof by said electrical discharge which will effect the generation of light in said first chamber;

means for introducing a sample gas into said second chamber to be photoionized by the light from said first chamber;

means for exhausting the photoionized sample gas from said second chamber; and

means including a collector electrode and a collector counter electrode disposed in said second chamber for measuring the ionization current of said sample gas.

4,266,197

REMOTE CONTROL TV SUBCARRIER PHASE SHIFTER SYSTEM

David W. Breithaupt, Maple Shade, N.J., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 910,888, May 30, 1978, Pat. No. 4,183,044. This application Mar. 26, 1979, Ser. No. 23,953

Claims priority, application United Kingdom, May 30, 1977, 22807/77

Int. Cl.³ H03K *5/159*

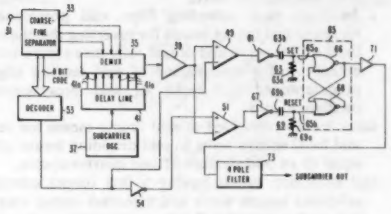
U.S. Cl. 328—55 **4 Claims**

1. A digital phase shifter for shifting the phase of signals from a signal source by an amount determined by a binary digital code comprising:

a multiple tapped delay line coupled to said source for providing at the sequential tap points sequentially increased delay signals,

switch means coupled to said tap points and responsive to said code for coupling the one of said tap points from said tap delay line to the output thereof as determined by said code,

means responsive to said code for providing D.C. voltages corresponding to said code, and



comparator means responsive to said output from said switch means and said D.C. voltages for advancing or retarding the phase of the signals from said switch means in proportion to said D.C. voltages.

4,266,198

SAMPLING SYSTEM FOR DECODING BIPHASE-CODED DATA MESSAGES

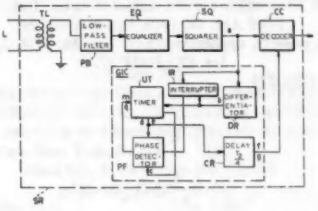
Bernardino Spada, Corbetta, Italy, assignor to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Sep. 7, 1979, Ser. No. 73,301

Claims priority, application Italy, Sep. 8, 1978, 27455 A/78

Int. Cl.³ H03D *3/18*

U.S. Cl. 329—50 **3 Claims**



1. In a receiver for a biphase-coded carrier wave of predetermined frequency undergoing a phase reversal in the middle of each cycle thereof and also at the beginning of certain cycles according to the logical value of corresponding bits of a binary message conveyed thereby, said carrier wave being preceded by a presynchronization oscillation with alternating half-cycles each equal to a cycle of said predetermined frequency, the receiver including input means connected to a transmission line over which said presynchronization oscillation and said carrier wave arrive from a remote station, decoding means connected to said input means for sampling said carrier wave once per cycle thereof to reconstruct said binary message, and circuitry for controlling the sampling of said carrier wave in said decoding means,

the improvement wherein said circuitry comprises:

differentiation means connected to said input means for deriving a spike from said presynchronization oscillation at the beginning of each of said half-cycles thereof;

timing means controlled by said differentiation means for producing a local square wave of said predetermined frequency undergoing a phase reversal at the beginning and at the midpoint of each of said half-cycles;

switching means connected to said input means and to said timing means for deriving from said local square wave a

reference square wave of the frequency of said presynchronization oscillation but offset therefrom by an odd number of quarter-cycles of said predetermined frequency;

binary phase-comparison means coupled to said switching means for identifying the half-cycles of said presynchronization oscillation coinciding with leading edges of said reference square wave;

a feedback path extending from said phase-comparison means to said timing means for inverting the phases of said local square wave and of said reference square wave upon detection of a coincidence of said leading edges with predetermined half-cycles of said presynchronization oscillation; and

delay means connected to said timing means for delivering said local square wave to said decoding means with a lag equal to an odd number of said quarter-cycles;

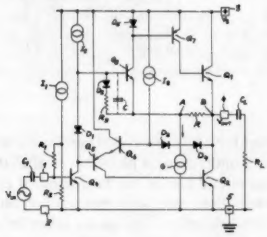
said switching means having a first output carrying said reference square wave and a second output carrying an inverted replica of said reference square wave, said phase-comparison means comprising a first comparison circuit with input connections to said timing means and to said first output for receiving said local square wave and said reference square wave, a second comparison circuit with input connections to said timing means and to said second output for receiving said local square wave and said inverted replica, and a coincidence gate connected to said first and second comparison circuits for emitting a phase-inverting signal on said feedback path only upon detecting coincidences of said predetermined half-cycles with leading edges of both said reference square wave and said inverted replica.

4,266,199

LINEAR ALTERNATING-CURRENT AMPLIFIER

Sergio Palara, Ferrara, Italy, assignor to SGS ATES Componenti Elettronicie S.P.A., Agrate Brianza, Italy

Filed Apr. 26, 1979, Ser. No. 33,502
Claims priority, application Italy, Apr. 28, 1978, 22798 A/78
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—274 **6 Claims**



1. In a linear alternating-current amplifier including a supply of direct current with a first and a second terminal, a first output transistor and a second output transistor connected in cascade with each other across said supply, said first output transistor having an emitter which forms a junction with a collector of said second output transistor and further having a collector connected to said first terminal, said second output transistor having an emitter connected to said second terminal, a pilot transistor with an emitter connected to said second terminal and with a collector coupled to a base of said second output transistor for saturating simultaneously therewith during alternate half-cycles of an a-c input signal applied between the emitter and a base of said pilot transistor, said first terminal being connected to a collector of said pilot transistor by an energizing circuit including a constant-current source, and a control transistor with a collector connected to said first terminal, an emitter connected to said junction, and a base connected to said energizing circuit at a point between said constant-current source and the collector of said pilot transistor, said control transistor being coupled to said first output transistor for driving same into maximal conduction during the remaining half-cycles of said input signal,

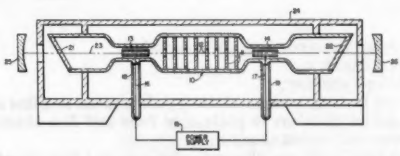
the combination therewith of a biasing resistor inserted in the connection between said junction and the emitter of said control transistor, and a shunt impedance connected across the series combination of said biasing resistor and said second output transistor for maintaining the potential difference between the base and the emitter of said control transistor at the conduction threshold thereof during said alternate half-cycles.

4,266,200

METAL HALIDE LASER TUBE STRUCTURE

Chi-sheng Liu, 1315 Knollwood Dr., Monroeville, Pa. 15146; Lelland A. C. Weaver, 2403 Collins Rd., Pittsburgh, Pa. 15235, and Roy K. Williams, R.D. #3 Box 103, Export, Pa. 15632

Filed Jan. 13, 1977, Ser. No. 758,977
Int. Cl.³ H01S *3/03*
U.S. Cl. 331—94.5 G **3 Claims**



1. In a metal halide laser apparatus including a laser discharge tube containing a metal halide laser medium, electrodes spaced apart to define a laser discharge gap therebetween, optical elements disposed at either end of said laser discharge tube to define an optical axis coinciding substantially with the longitudinal axis of said laser discharge tube, electrical excitation means connected to said electrodes for providing laser excitation,

the improvement for increasing the operational life of said laser discharge tube, the improvement comprising,

a plurality of electrical insulator apertured discs positioned in spaced-apart alignment within said laser discharge tube and sealed to the inner wall of said laser discharge tube, the apertures of said electrical insulator apertured discs being aligned about said optical axis.

4,266,201

METHOD AND APPARATUS USING FIRST AND SECOND PARALLEL CHANNELS, ONE OF WHICH INCLUDES AN INVERTER, FOR PRODUCING AN ELECTRICAL SIGNAL WITH AN IMPROVED ON/OFF RATIO

Robert V. Belfatto, Melbourne Beach, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Mar. 23, 1979, Ser. No. 23,350
Int. Cl.³ H03K *7/00*
U.S. Cl. 332—9 R **30 Claims**

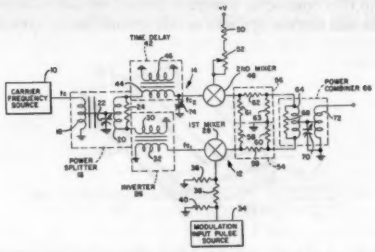
1. An electrical system having an improved on/off ratio, comprising:

a frequency source for providing a frequency signal;

a first channel coupled to said frequency source comprising a first combining means for receiving said frequency signal and an information signal from an information source and producing a first combined output signal having "on" and "off" periods;

a second channel coupled to said frequency source comprising a second combining means for receiving the frequency signal and a signal from an additional signal source different than said information signal source and producing a second combined output signal;

inverter means coupled between the frequency source and one of said first and second combining means to invert the frequency signal going to one of said first and second combining means; and



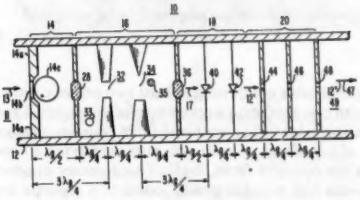
third combining means coupled to the outputs of said first and second combining means to add the output of said second combining means to the output of said first combining means during both the "on" and "off" periods of the first combined output signal.

4,266,202

RECEIVER PROTECTOR HAVING MEANS FOR SUPPRESSING INTERNALLY GENERATED NOISE SIGNAL FREQUENCIES

Harry Goldie, Randallstown, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 26, 1979, Ser. No. 61,128
Int. Cl.³ H01P 1/14; H04B 1/10
U.S. Cl. 333—13 **14 Claims**



1. Apparatus for protecting a receiver from damage by microwave signals including pulses having rise times less than 10 nanoseconds which exceed a predetermined power level comprising:

a waveguide suitable for propagating microwave signals of a predetermined electrical wavelength λ_g having an input end and an output end;

non-linear elements including a gas discharge limiter stage positioned in said waveguide for isolating from said output end energies associated with a first predetermined range of noise and microwave signal frequencies at times said microwave signals exceed said predetermined power level;

first means positioned after non-linear elements in said waveguide for isolating from said output ends energies associated with said first predetermined range of noise and microwave signal frequencies; and

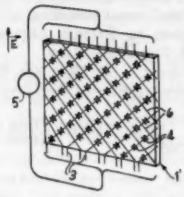
second means positioned after said first means in said waveguide for isolating from said output end energies associated with a second and third predetermined range of noise signal frequencies outside said first predetermined range of frequencies whereby undesired noise signal frequencies generated by operation of said non-linear elements are isolated from said output end.

4,266,203

MICROWAVE POLARIZATION TRANSFORMER

Lucien Saudreau, and Jean-Paul Biansan, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 22, 1978, Ser. No. 880,282
Claims priority, application France, Feb. 25, 1977, 77 05585
Int. Cl.³ H01P 1/17
U.S. Cl. 333—21 A **13 Claims**



1. In combination, a source of linearly polarized microwave radiation and a polarization transformer interposed in the path of said radiation, said transformer comprising:

at least one dielectric plate perpendicular to said path;

an array of parallel conductive wires embedded in said plate and oriented at an angle of substantially 45° to the direction of polarization of said radiation;

a multiplicity of electronic switches inserted in said wires within said plate;

a set of parallel conductive wires perpendicular to wires of said array embedded in said plate, the inductive impedances of said set and of said array being substantially identical in one state of said switches; and

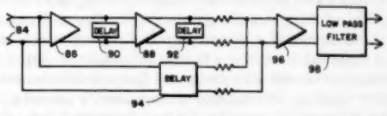
control means for selectively changing between a conductive state and a nonconductive state of all said switches, with transformation of said radiation to circular polarization in said conductive state.

4,266,204

DELAY LINE SIGNAL EQUALIZER FOR MAGNETIC RECORDING SIGNAL DETECTION CIRCUITS

George V. Jacoby, Los Altos, Calif., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 71,955
Int. Cl.³ H03H 11/06
U.S. Cl. 333—28 R **9 Claims**



1. A signal amplitude equalizer for reforming an input signal of sequences of data pulses of variable peak amplitudes into an output signal of sequences of symmetrical equal-amplitude data pulses, said equalizer having a transfer function in the frequency domain that is proportional to the value: $1+K\sin^2\tau\pi f$, where f is the frequency, τ is a time delay, and K is a constant that is alterable to correspondingly alter the zero-amplitude width of each data pulse in said output signal sequences, said equalizer including:

first and second delay line circuitry coupled in series and to the input terminals of said equalizer;

each of said first and said second circuitry including a delay line having a delay of τ and each delay line being terminated in its characteristic impedance, each of said first and said second delay line circuitry executing the function, K $\sin\tau\pi f$; and

circuitry means including third delay line circuitry for add-

ing the signal at said input terminals to the signal produced from said first and second series delay line circuits.

4,266,205

RESONATOR FORMED IN INTEGRATED MOS TECHNOLOGY UTILIZING SWITCHED CAPACITORS

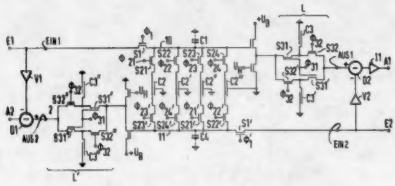
Hermann Betzl; Ernst Hebenstreit, both of Munich, and Roland Schreiber, Ottobrunn-Riemerling, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,701

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828840

Int. Cl.³ H03H *17/06, 17/04*

U.S. Cl. 333—165 **6 Claims**



1. A resonator formed in integrated MOS technology using switched capacitors with at least one accumulator stage which has a conductor at reference potential and a continuous signal series conductor extending from the accumulator input to the accumulator output, in which a series switch is connected in series with the accumulator input and a first capacitor connected from a shunt branch to a reference potential and at least one series circuit connected in parallel with said first capacitor consisting of a cross switch and a second plurality of capacitors connected to said reference potential, characterized in that the connection points of the cross switches adjacent said second plurality of capacitors are respectively connected by way of further switches with an additional continuous signal series conductor which is connected on the one hand by way of a third capacitor with said reference potential, and on the other hand, by way of a second series switch with a second accumulator input; and both signal series conductors are connected by way of respective transit time elements consisting of series switches and additional capacitors with the output or, respectively, with a further output of the accumulator arrangement; and in that a first input of the resonator arrangement is formed by means of the accumulator input; and a first difference element is connected to a second output of said resonator, and has a first input connected to a further accumulator output and a second input connected by way of a first transfer element with the first input of the resonator arrangement; a second input of the resonator arrangement is formed by means of the further accumulator input; and a second difference element is provided whose output is connected through an inverter element with a first output of the resonator arrangement, and has a first input connected with the accumulator output, and a second input connected by way of a second transfer element with the second input of the resonator arrangement.

4,266,206

STRIPLINE FILTER DEVICE

Brian E. Bedard, Tamarac, and Bertho K. Boman, Ft. Lauderdale, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 31, 1978, Ser. No. 938,564

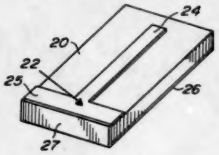
Int. Cl.³ H01P *1/203, 1/205, 11/00*

U.S. Cl. 333—204 **12 Claims**

1. An improved transmission line resonator device, adapted for use in a predetermined frequency band, wherein the effects of mask misalignment during manufacture are minimized, including in combination,

a dielectric substrate having a conducting layer formed on one side thereof as a ground plane,

a thin film conductor structure formed on said substrate on the side thereof opposite to said ground plane layer which



includes at least one elongated relative narrow resonator portion having a length related to the predetermined frequency but less than the length of said dielectric substrate, and a relatively wide grounding portion connected to said resonator portion at one end thereof, and

electrical means connecting said grounding portion to said ground plane conducting layer.

4,266,207

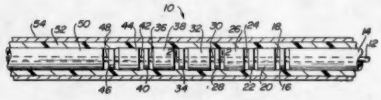
COAXIAL CABLE BAND-PASS FILTER

Robert H. Schafer, Perkasie, Pa., assignor to UTI Corporation, Collegeville, Pa.

Filed Nov. 7, 1979, Ser. No. 92,167

Int. Cl.³ H01P *1/20, 3/06, 11/00*

U.S. Cl. 333—206 **5 Claims**



1. A coaxial cable comprising at least two center conductors aligned with one another, a sleeve of dielectric material around each center conductor, at least one filter coupling element in the form of a laminent of dielectric material having a conductive layer on opposite faces, each of said center conductors have one end face metallurgically joined to a separate one of said conductive layers, said laminent dielectric material being substantially thicker than the thickness of each one of said conductive layers, a seamless tube of dielectric material around and contacting the outer periphery of said sleeves and laminent, and a monolithic jacket of electrically conductive material surrounding said seamless tube, said jacket exerting radially inwardly compressive forces on the entire circumference of said seamless tube to eliminate any air gap therebetween.

4,266,208

BROADBAND MICROWAVE FREQUENCY DIVIDER FOR DIVISION BY NUMBERS GREATER THAN TWO

William D. Cornish, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defense, Canada

Filed Apr. 16, 1979, Ser. No. 30,386

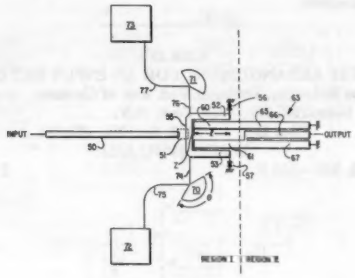
Claims priority, application Canada, Aug. 31, 1978, 310453

Int. Cl.³ H01P *1/20*

U.S. Cl. 333—218 **4 Claims**

1. A single stage analog microwave frequency divider for dividing an input microwave signal by 4, comprising a substrate having an input microstrip transmission line capacitively coupled to a resonator formed of first and second spaced apart parallel microstrip transmission lines of predetermined length, one end of each of said first and second microstrip lines being

joined together by a transverse microstrip transmission line and the other end of each of said first and second microstrip transmission lines being connected to substrate ground via an associated varactor diode, said resonator generating an output signal having a frequency one-fourth that of an input signal applied to said input microstrip transmission line, said first and



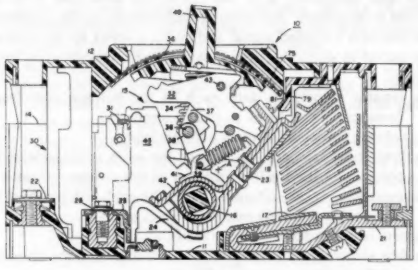
second microstrip transmission lines being electromagnetically coupled to third and fourth microstrip transmission lines and said third and fourth microstrip transmission lines being connected in series to a stripline balun and supplying said resonator output signal to said balun, said balun comprising an output of the divider.

4,266,209

CIRCUIT BREAKER HANDLE AND LOST MOTION CONNECTED SHIELD

Bernard Di Marco, Bellefontaine, and Andrew J. Kralik, Marysville, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 9, 1979, Ser. No. 92,864
Int. Cl.³ H01H *9/02, 13/04*
U.S. Cl. 335—6 **12 Claims**



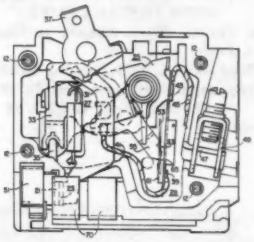
1. A circuit breaker including contact means; a trip free operating mechanism connected to said contact means for opening and closing thereof; fault current responsive trip means for automatically actuating said mechanism to open said contact means upon the occurrence of predetermined fault current conditions; a housing to which said contact means, said mechanism and said trip means are mounted; said housing including a front wall having an arcuate internal surface portion and an elongated wall aperture extending through said surface portion; said mechanism including a manual operating means comprising an apron having an arcuate front surface disposed behind said arcuate surface portion and a handle extending from the front of said apron and through said wall aperture; said handle being mounted for reciprocable movement in said wall aperture longitudinally thereof between circuit breaker On and Off positions; said handle being moved automatically to a Tripped position, intermediate said On and Off positions, upon actuation of said mechanism by said trip means; a thin elongated shield interposed between said arcuate front surface and said arcuate surface portion; said shield being substantially longer than said apron and having a shield aperture through which said handle extends; said shield aperture having a dimension measured longitudinally of the wall aperture that is substantially greater than the dimension of said handle measured longitudinally of the wall aperture to form a lost-motion connection between the handle and the shield whereby for all positions of said handle the ends of the shield extend beyond the ends of the wall aperture and the latter is closed through cooperation of the shield and the apron; said arcuate surface bearing indicia viewable through the shield aperture when the handle is in said On position to indicate that the circuit breaker is closed; said handle when in said On position carrying said shield to a first position; and latch means for positively maintaining said shield in said first position while said handle moves from said On position to said Trip position, with said handle in said Trip position and said shield in said first position the latter blocks said indicia from view.

4,266,210

CIRCUIT BREAKER WITH IMPROVED ARC EXTINGUISHING MEANS

Stephen A. Mrenna, Brighton Township, Beaver County, and James P. Ellsworth, Beaver, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 10, 1979, Ser. No. 73,821
Int. Cl.³ H01H *9/30*
U.S. Cl. 335—201 **2 Claims**



1. A circuit breaker comprising a molded insulated housing, mounted within the housing a pair of separable contacts operable between opened and closed positions, a releasable member in an initial position and movable when released to a trip position to effect automatic opening of the contacts, said breaker further comprising tripping means for effecting release of the releasable member when a predetermined overload current is sensed by the tripping means, two ferromagnetic generally U-shaped arc shields mounted in proximity to the separable contacts and disposed such that one of said separable contacts moves generally through the arc shields, the arc shields being disposed to split the arc into smaller arcs for more effective arc extinguishing action, and to draw the arcs away from other interior circuit breaker components.

4,266,211

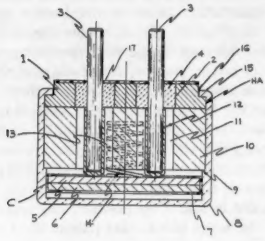
SNAP ACTION THERMOSTATS

Herman Ulanet, c/o George Ulanet Company, 413 Market St., Newark, N.J. 07105

Filed Apr. 24, 1978, Ser. No. 899,357
Int. Cl.³ H01H *9/00, 37/00*
U.S. Cl. 335—208 **13 Claims**

1. A snap action thermostatic switch comprising a permanent magnet fixedly positioned in a housing, contacts affixed to lower ends of a pair of straight rigid terminals insulated from each other, the upper ends of said terminals affixed perpendicularly through a header and electrically insulated therefrom,

said lower ends of said terminals passing through clearance holes in said permanent magnet and electrically insulated therefrom, said terminals being in operative registry with a bridging contact attached to a facing side of a low mass Curie point moveable magnetic disc armature so that a temperature change in said disc of a given Curie alloy characteristic correspondingly changes its magnetic permeability to such extent that the pull of said permanent magnet overcomes the counteracting force of a compression spring located centrally in a cavity of the lower end of the permanent magnet thereby causing single pole double break contacts either to close or open an electric circuit.

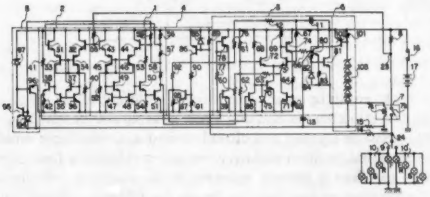


4,266,212

APPARATUS FOR CONTROLLING VEHICLE DIRECTIONAL LAMPS

Tiaki Mizuno, Toyota, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 15, 1979, Ser. No. 66,826
Claims priority, application Japan, Sep. 20, 1978, 53-115500
Int. Cl.[3] B60Q *1/38*; G08B *5/38*
U.S. Cl. 340—81 R **2 Claims**



1. In a turn-direction indicating system of a vehicle in which either one of two lamp groups is connectable to a battery through a relay means having a relay coil and a relay switch, an apparatus comprising:

control circuit means effective to generate periodic pulse signals;

output transistor means the emitter-collector path of which is connected in series with said relay coil across said battery and the base of which is connected to said control means, said output transistor means being effective to energize and deenergize said relay coil in response to said periodic pulse signals;

resistor means;

protection circuit means connected in series with said resistor means across said battery and effective to render said output transistor means conductive when the voltage across said battery rises above the supply voltage of said battery;

a capacitor connected to the base of said output transistor means and effective to render said output transistor means conductive and nonconductive gradually in response to said periodic pulse signals; and

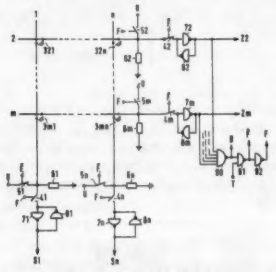
a diode connected to the base of said output transistor means and to the junction between said output transistor means and said relay coil and effective to render said output transistor means conductive to thereby allow the electric current to flow through said relay coil in the reverse direction.

4,266,213

CIRCUIT ARRANGEMENT FOR AN INPUT KEYBOARD

Joachim Renschke, Teningen, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Dec. 10, 1979, Ser. No. 102,214
Int. Cl.[3] H04Q *3/52*
U.S. Cl. 340—166 R **2 Claims**



1. A circuit arrangement for an electronic equipment input keyboard comprising pushbutton switches arranged in n columns and m rows, having two terminals each, with each of said pushbutton switches, when actuated, connecting one column lead associated with the respective column, directly with one row lead associated with the respective row, and with the circuit arrangement transmitting with respect to the columns a one-out-of-n encoded signal and, with respect to the rows, a one-out-of-m encoded signal, said circuit arrangement comprising:

a resistor associated with each of the column row leads, connecting said leads to circuit ground;

a column inverter for each column lead;

a first electronic column switch for each column lead for connecting the lead to an input of the column inverter;

a second electronic column switch for each column lead for connecting the lead to a supply voltage;

a row inverter for each row lead;

a first electronic row switch for each row lead for connecting the lead to an input of the row inverter;

a second electronic row switch for each row lead for connecting the lead to a supply voltage;

a highly resistive hold inverter is connected in an antiparallel manner to each column inverter and to each row inverter respectively;

a first NAND gate having m inputs connected to the outputs of the row inverters and an output;

a second NAND gate having an input connected to the output of the first NAND gate and another input to which is applied at least temporarily a rectangular clock signal;

an inverter has an input connected to the output of said second NAND gate;

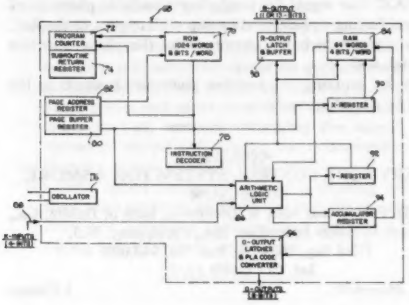
control inputs of both said first electronic column switches and said second electronic row switches are connected to the output of said inverter; and

control inputs of both said first electronic row switches and said second electronic column switches are connected to the output of said second NAND gate.

4,266,214
ELECTRONICALLY OPERABLE GAME SCORING APPARATUS

Joseph Peters, Jr., 2509 Q. 179th St., Torrance, Calif. 90504

Filed Sep. 24, 1979, Ser. No. 78,230
Int. Cl.[3] G06F *15/44;* G08B *5/36*
U.S. Cl. 340—323 R 54 Claims



1. An electronically operable athletic game scoring apparatus for scoring information on an athletic game in which two or more players compete and events of the game and for the competing players of the athletic game, said apparatus comprising:

(a) a relatively small and hand-held portable housing,

(b) a plurality of manually actuable input switches on said housing for introducing scoring information relevant to an athletic game and to several events of said game, said input switches also capable of introducing information relevant to each of the players of the game and the events of the game,

(c) at least one first manually actuable display controlling switch on said housing for permitting display of scoring information relevant to each of such players of the game,

(d) at least one second manually actuable display control switch on said housing for permitting display of total scoring information of said game or of scoring information of one or more of the events in said game,

(e) at least one third manually actuable display control switch on said housing for permitting display of scoring information relevant to a scoring parameter of the game or the events of the game, and

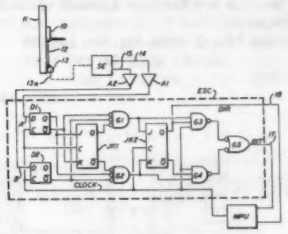
(f) a display means on said housing for displaying scoring information of the game or events upon actuation of the first display control switch and for displaying scoring information of any or all of the players upon actuation of the second display control switch.

4,266,215
REVERSIBLE INCREMENTAL ENCODING METHOD AND APPARATUS

Walter P. Adams, Salt Lake City, Utah, assignor to The Raymond Corporation, Greene, N.Y.

Filed Nov. 16, 1978, Ser. No. 961,125
Int. Cl.[3] H03K *13/00*
U.S. Cl. 340—347 P 5 Claims

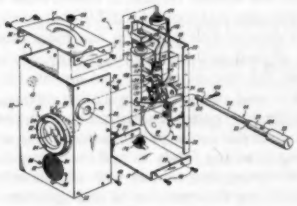
1. The method of indicating the movement of a device which provides a pair of phased-apart boolean signals which rise and fall between low and high values on first and second lines, which comprises the steps of: providing a first pulse each time the signal on said first line rises if the signal on said second line is at a predetermined one of its values; providing a second pulse each time the signal on said first line falls if the signal on said second line is at said predetermined one of its values; sensing the occurrence of said first and second pulses to provide a counting direction signal; combining said first pulses, except for each first pulse first following a second pulse, and said second pulses, except for each second pulse first following a first pulse, to provide counting occurrence signals; and causing each counting occurrence signal to increment or decrement a counter in accordance with the state of said counting direction signal.



4,266,216
COMBINATION PORTABLE INTRUSION ALARM AND FLASHLIGHT

Von A. Trusty, 4703 First St., West, Apt. 195, Bradenton, Fla. 33507

Filed Feb. 12, 1979, Ser. No. 11,233
Int. Cl.[3] G08B *13/08*
U.S. Cl. 340—546 2 Claims



1. A portable alarm device, comprising:

a housing including two opposed side walls;

a power source fixed to said housing;

sound emitting means fixed to said housing;

light emitting means fixed to said housing;

first switch means within said housing for connecting said power source to both said sound and said light emitting means, said first switch means including a first contact connected to said power source, a second contact connected to said light emitting means, and a third contact connected to said sound emitting means;

an actuating rod mounted on said housing for sliding movement along a path extending through the space separating said first contact from said second and said third contacts, said rod including a first section having a size insufficient to bridge said first, second and third contacts and a conductive larger section having a size sufficient to bridge said first, second and third contacts for engaging and electrically connecting said first contact to both said second contact and said third contact to close said first switch means, and said rod having opposite ends projecting outside of said housing beyond both of said side walls and adapted to be moved in response to the movement of a door, window, or other movable object to close said first switch means;

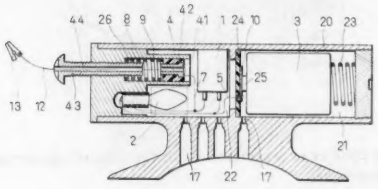
means to restrict sliding movements of said actuating rod so that said opposite ends cannot enter said housing; and

manuallly operable second switch means exposed to the exterior of said housing for connecting said power source to said light emitting means independently of said actuating rod.

4,266,217
SIGNAL DEVICE FOR FISHING RODS

Dai-Hae Kao, 214-1 Shih-Erh-Tien-Dong Li, and Shii-San Shieh, 27, Hsin Liao, Lin 2, Chang An Li, both of An Nan Chue, Tainan, Taiwan

Filed May 2, 1980, Ser. No. 146,138
Int. Cl.³ A01K *97/12*
U.S. Cl. 340—573 **1 Claim**



1. A signal device for fishing rods comprising:

an electric contact primarily provided in a room located in a housing of said signal device and comprising an adjustable screw-like contact element having an axial through-hole therein, said contact element being screwed into a corresponding threaded inner surface of a through-way communicating with said room so as to permit said adjustable screw-like contact element to extend from outside of said housing into said room; a slidable contact element with an axial through-hole placed in said room substantially axially aligned with said through-way of said adjustable screw-like contact element and insulated from the inner wall of said room by an insulating device; a spring disposed in said room and surrounding the protruding part of said adjustable screw-like contact element, one end of said spring attaching firmly to said insulating device so as to avoid coming into contact with said slidable contact element during the operation of said signal device;

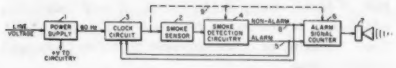
an electric sounder and/or a light having an electric wire for connecting to a terminal of a battery and further electric wire for connecting to said insulated slidable contact element; and

a string having a clamping element provided at an end thereof and the other end thereof being led through said axial through-hole of said adjustable contact element, said spring, and through-hole of said slidable contact element and secured finally to said slidable contact element; said clamping element being used to clamp a tense fishing line, whereby a pulling force applied thereto from a hooked fish will be transmitted to said string to actuate said electric contact and produce a signal.

4,266,218
ALARM SYSTEM CONTROL CIRCUIT

John J. Kardash, Greenville, R.I., assignor to Cherry Semiconductor Corporation, Cranston, R.I.

Filed Oct. 12, 1978, Ser. No. 950,867
Int. Cl.² G08B *17/10*
U.S. Cl. 340—628 **24 Claims**



1. A smoke detection alarm system comprising:

smoke detection means responsive to a clock signal applied thereto for producing an alarm signal representative of the presence of smoke;

means for providing an output indication of the presence of smoke upon the production of a predetermined number of consecutive alarm signals by the smoke detection means;

phase selection means for producing a phase selection signal and for changing the phase selection signal in response to the production of an alarm signal by the smoke detection means;

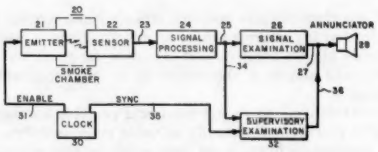
clock means responsive to the phase selection signal and to an A.C. line signal for producing a variable phase clock signal having a phase relationship with respect to the A.C. line signal which is determined by the phase selection signal; and

means for applying the variable phase clock signal to the smoke detection means.

4,266,219
SUPERVISORY CONTROL SYSTEM FOR A SMOKE DETECTOR

Ronnie D. Foster, and Max R. Dickerson, both of Dublin, Ga., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Sep. 18, 1978, Ser. No. 943,095
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—630 **3 Claims**



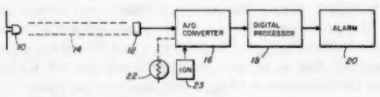
1. A smoke detector system including a chamber constructed to admit air and particles of combustion, an emitter for periodic energization at a reference frequency to produce radiation in the chamber, a radiation sensor for producing an electrical information signal the amplitude of which varies as a function of the level of radiation striking the sensor, signal processing means coupled to the sensor, signal examination means coupled to the signal processing means for examining the amplitude of the information signal and for providing an alarm signal when such examination indicates presence of particles of combustion in the chamber, and an annunciator for utilizing the alarm signal to control a desired function, and further comprising

a supervisory examination circuit coupled to the output side of the signal processing means, for examining the amplitude of the information signal to evaluate the operability of the emitter and sensor associated with the chamber, and to evaluate the operability of the signal processing means, which supervisory examination circuit is connected to pass a signal to the annunciator when a malfunction of the system is detected.

4,266,220
SELF-CALIBRATING SMOKE DETECTOR AND METHOD

William J. Malinowski, Johnson St., P.O. Box 274, Bryantville, Mass. 02327

Filed Jul. 27, 1979, Ser. No. 61,186
Int. Cl.³ G08B *17/10*
U.S. Cl. 340—630 **9 Claims**



2. A system for detecting the presence of an aerosol such as smoke in a gaseous medium, comprising

(a) a light source adapted to direct a beam of light through said medium,

(b) photoresponsive means spaced from and in the path of said beam and adapted to generate analog electrical signals corresponding to the intensity of said beam,

(c) analog-to-digital converter means connected to said photoresponsive means and adapted to convert the analog signals therefrom into digital signals,

(d) digital processing means including memory means and timing means adapted to store reference data therein connected to said converter means for cyclically and at relatively short intervals comparing the output of said converter means with said reference data and cyclically and at relatively long intervals measuring the output of said converter means and placing the measurement in said memory as new reference data, and,

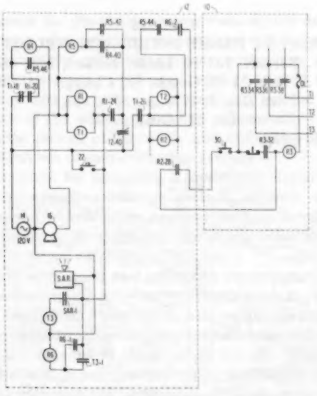
(e) alarm means connected to said processing means and adapted to generate an alarm signal in the event that any difference beyond a predetermined amount is detected during a short interval comparison.

4,266,221

PERSONNEL ALARM CIRCUIT FOR INDUSTRIAL MACHINERY

J. C. Hawkins, P.O. Box 1348, Wise, Va. 24293

Filed Sep. 20, 1979, Ser. No. 77,322
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—679 **3 Claims**



1. A safety circuit for use in connection with power driven industrial machinery comprising:

a start circuit for the machinery;

alarm means;

means interlocked with said start circuit disabling operation thereof until said alarm means has been energized for a predetermined time;

means responsive to actual operation of said alarm, interlocked with said start circuit disabling operation thereof until said alarm means has actually operated for a predetermined time;

manual means for energizing said alarm;

means in circuit with said alarm for terminating said alarm after a predetermined time;

means responsive to termination of said alarm for enabling said start circuit; and

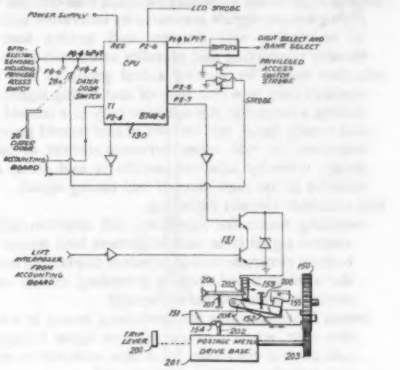
means for disabling said start circuit in the event that the equipment with which it is associated does not start within a predetermined time following termination of said alarm.

4,266,222

ELECTRONIC POSTAGE METER HAVING RESET BASE WARNING

Alton B. Eckert, Norwalk, and Edward C. Duwel, Trumbull, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,427
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—679 **7 Claims**



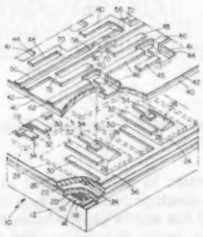
1. In an electronic postal meter having a drive input for receiving drive energy from an internal source, a shutter inhibiting said drive input and controlled in a printing operation by an external shutter release means, an internal computing system, an interposer for blocking operation of said shutter under the control of a solenoid, said solenoid being controlled by said computing means to block operation of said shutter until said meter is in a condition to print postage; the improvement comprising sensor means for detecting the position of said interposer, timing means connected to provide an output signal in response to non-operation of said interposer within a determined period following energization of said solenoid, and warning means providing an external warning of the occurrence of said signal.

4,266,223

THIN PANEL DISPLAY

Norman J. Frame, Milwaukee, Wis., assignor to W. H. Brady Co., Milwaukee, Wis.

Filed Dec. 8, 1978, Ser. No. 967,578
Int. Cl.³ H05B *33/26*
U.S. Cl. 340—719 **11 Claims**



1. A multilayer display apparatus, comprising:

an outer layer;

a plurality of separate radiation-emitting portions beneath said outer layer, each said portion including a control electrode for energizing said portion and said outer layer being transparent to the radiation emitted by said portions;

a plurality of thin-film transistor circuits beneath said portions, each said circuits being adjacent and associated with at least one of said portions and connected thereto via said control electrode;

timing lead means connected to each said transistor circuit for supplying a common timing signal to said circuits;

brightness lead means connected to each said transistor circuit for supplying a common brightness control signal to said circuits;

arming lead means extending between said circuits for supplying arming signals generated by individual said circuits to succeeding said circuits, said arming lead means thereby connecting said plurality of circuits in series;

selection means for making a first group of said circuits sensitive only to a first state of said timing signal and for making a second group sensitive only to a second state of said timing signal, said circuits of said second group being interposed in said series between circuits of said first group, whereby adjacent circuits in said series are not sensitive to the same state of said timing signal;

said transistor circuits including,

switching means for supplying said common brightness control signal from said brightness lead means to said control electrode to said adjacent display portion when the arming signal from a preceding circuit and said common timing signal are sensed,

means for maintaining said switching means in a conductive state, wherein said brightness signal is supplied to said control electrode, for a time sufficient to energize said radiation-emitting portion, and

means for supplying an arming signal to said arming lead means for arming the successive circuit in said series,

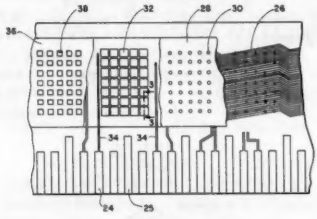
whereby successive state changes in said timing signal between said first and seccnd states cause successive said transistor circuits in said series to be activated, thereby energizing successive said radiation-emitting portions in a scanning movement.

4,266,224

HIGH PERFORMANCE INFORMATION DISPLAY PANEL

Roger A. Frankland, Scottsdale, Ariz., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 26, 1979, Ser. No. 15,671
Int. Cl.[3] G06F *3/14*
U.S. Cl. 340—773 **6 Claims**



1. A message readout dot matrix gas discharge display panel comprising:

a substrate;

a face plate sealed in spaced relation to said substrate to establish an envelope containing an ionizable gas;

a first series of dot matrix groups located on said substrate and having a matrix of equally sized and uniformly arranged discrete cathode bits;

a second series of dot matrix groups located on said substrate and having a matrix of equally sized and uniformly arranged discrete cathode bits of the same size as in said first series of dot matrix groups, each of said groups of said first and second series of dot matrix groups being arranged in alternating sequence with respect to each other so that no two dot matrix groups of one of said first and second series are next to each other on said substrate;

a set of connector lines extending along said substrate, each of said connector lines interconnecting the same respective cathode bit of each of said first series of dot matrix groups;

another set of connector lines extending along said substrate, each of said connector lines interconnecting the same respective cathode bit of each of said second series of dot matrix groups, so that the peripheral discrete cathode bits of one dot matrix group of said first series of dot matrix groups is positioned as close to the peripheral discrete cathode bits of an adjacent dot matrix group of said second series of dot matrix groups as said peripheral discrete cathode bit is as close to other discrete cathode bits within its own group so that more of said dot matrix groups can be positioned on said substrate without adjacent dot matrix discrete cathode bits of said first series of groups being inadvertently activated when an adjacent group of discrete cathode bits of said second series of groups is activated;

a dielectric layer between said character bits and said connector lines, said dielectric layer having a matrix of apertures to permit interconnection between said connector lines and said respective cathode bits of each dot matrix group of said first and second series of dot matrix groups;

an anode electrode positioned in operative relation with each of said dot matrix groups; and

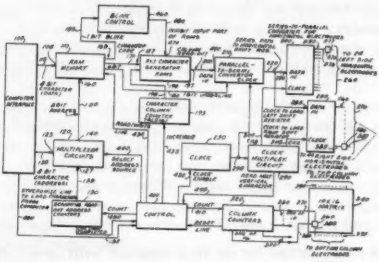
means for directly addressing each of said character bits to produce high luminance for enhancing viewability of said display.

4,266,225

DISPLAY PANEL INTERFACE CIRCUIT

Bradley W. Burnett, 101 N. Linda, Hobart, Ind. 46342, and Leonard A. Fish, 21 W. Goethe St., Chicago, Ill. 60610

Filed Dec. 5, 1978, Ser. No. 966,653
Int. Cl.[3] G06F *3/14*
U.S. Cl. 340—799 **8 Claims**



1. Apparatus for refreshing the dot display of a selected column of a dot matrix display having a plurality of dots arranged in rows and columns, and a plurlity of terminals associated with said rows and columns, comprising:

means for repetitively selecting at a predetermined first rate one of said columns;

means for respectively generating at a predetermined refresh rate a serial stream of data having one bit for each dot in the selected column;

means for generating two interleaved series of clock pulses;

means responsive to said two interleaved series of clock pulses and to said serial stream of data bits for forming two parallel groups of data bits, a first group consisting of those bits in said serial bit stream associated with a first set of dots in said selected column and a second group consisting of those bits in said serial bit stream associated with a second set of dots in said selected column;

means responsive to said two parallel groups of data bits for

generating a first and a second set of electrical signals, each member of which corresponds to a member of said first or said second sets of dots of said selected column; and

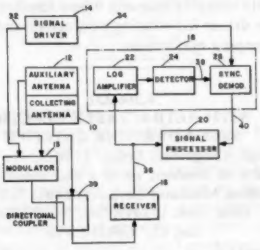
means for connecting, for a selected time period, each of said members of said first and second sets of electrical signals to terminals associated with the rows corresponding to said first and second sets of dots.

4,266,226

SIDELOBE DISCRIMINATOR

William F. McNaul, Escondido, and Paul R. Eberhardt, San Diego, both of Calif., assignors to Cubic Corporation, San Diego, Calif.

Filed Sep. 12, 1979, Ser. No. 75,140
Int. Cl.³ H04B 7/00
U.S. Cl. 343—100 LE **28 Claims**



1. A system for discriminating between signals arriving on the mainbeam of a collecting antenna and signals arriving on the sidelobes of the collecting antenna, comprising

an auxiliary antenna positioned relative to said collecting antenna for receiving signals arriving on the radiation pattern of the auxiliary antenna substantially coincident with the receipt of signals by said collecting antenna on the sidelobes of said collecting antenna;

a signal driver for providing a modulation signal having a predetermined modulation pattern, wherein the signal driver is coupled to the auxiliary antenna for modulating said signals received by the auxiliary antenna to have said predetermined modulation pattern;

a receiver coupled to said collecting antenna and the auxiliary antenna for providing received signals in response to both the signals collected by said collecting antenna and said modulated from the auxiliary antenna; and

a detector coupled to the receiver for detecting received signals having said predetermined modulation pattern to thereby discriminate said detected signals as being coincident with said signals arriving on the sidelobes of said collecting antenna, and for providing an identification signal to indicate whether the received signals is coincident with signals arriving on the sidelobes of the collecting antenna.

4,266,227

MOUNTING FOR MOBILE COMMUNICATIONS ANTENNA

Herbert R. Blaese, Chicago, Ill., assignor to Avanti Research & Development, Inc., Addison, Ill.

Filed Aug. 20, 1979, Ser. No. 67,804
Int. Cl.³ H01Q 1/32
U.S. Cl. 343—715 **7 Claims**

1. An antenna assembly for a mobile transmitting and receiving antenna comprising:

a mounting member comprising a base and a pair of spaced wall members projecting upwardly from said base defining a groove therebetween, each wall member defining a bore, said mounting member being adapted to be mounted on the surface of a vehicle;

socket means, said socket means being adapted to mount an elongated radiating member and to secure said radiating member to said mounting member, said socket means comprising a lower portion proportioned to be positioned in said groove and defining a threaded socket bore in alignment with the bores in said wall members, the thread in said threaded bore being continuous and unidirectional; and

a pair of substantially identical screws, one being disposed in each of the wall member bores and being in threaded engagement with the threaded socket bore to secure said socket means in a predetermined disposition and against dislodgement;

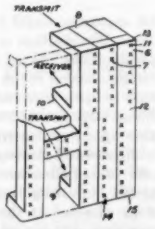
whereby when forces are exerted on said socket means to tend to move said socket means about the axis of the threaded socket bore, if one of said screws tends to loosen its engagement therewith the other tends to tighten its engagement therewith, thereby tending to maintain the predetermined disposition of said socket means with respect to said mounting member.

4,266,228

CIRCULARLY POLARIZED CROSSED SLOT WAVEGUIDE ANTENNA ARRAY

Emmanuel J. Perrotti, Ramsey, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 832,149, Sep. 12, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,268
Int. Cl.³ H01Q 13/10
U.S. Cl. 343—771 **5 Claims**



1. A circularly polarized crossed slot waveguide antenna array comprising:

at least a first pair of waveguides supporting only the TE_{10}

mode disposed side by side, each of said first pair of waveguides having a first broad wall facing in the same direction, each of said first broad walls having a longitudinal center line; and

a first plurality of crossed slots disposed in each of said first broad walls parallel to and spaced from said center line, each of one half of said first plurality of crossed slots on one side of a central area of each of said first broad walls between both extremities of each of said first pair of waveguides being disposed on one side of said center line and each of the other half of said first plurality of crossed slots on the other side of said central area being disposed on the other side of said center line, said first plurality of crossed slots in one of said first broad walls being spaced from said first plurality of crossed slots in the other of said first broad walls a predetermined amount;

said first pair of waveguides and each of said first plurality of crossed slots cooperating to provide a single beam, circularly polarized antenna pattern for said array; each of said first pair of waveguides are excited at both extremities thereof for transmission of circularly polarized radiation, both extremities of one of said first pair of waveguides being excited out of phase with both extremities of the other of said first pair of waveguides to produce in-phase excitation of said first plurality of crossed slots; and a second pair of waveguides each disposed orthogonally to a second broad wall of a different one of said first pair of waveguides, each of said second broad walls being parallel to an associated one of said first broad walls, each of said second pair of waveguides intersecting an associated one of said second broad walls in a central area thereof intermediate said both extremities to receive circularly polarized radiation received by said array.

4,266,229

LIGHT SENSITIVE JET INKS

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Mar. 26, 1979, Ser. No. 24,116
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—1.1 **5 Claims**

1. A process for information recording comprising producing a fine jet of colorless liquid containing at least one silver salt, modulating the charge density of the jet by applying an electric field in accordance with the information to be recorded, directing the jet of liquid to a recording medium to record said information, and subsequently exposing said recorded information to ordinary light, thereby rendering said recorded information visible.

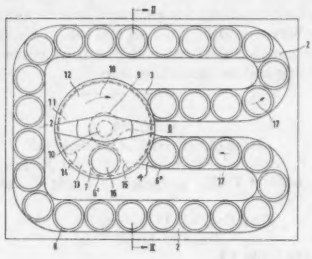
4,266,230

TIME VERIFICATION APPARATUS

Claudio Polli, Ruggell, Switzerland, assignor to Neco AG, Spielhof, Switzerland

Filed Jun. 5, 1979, Ser. No. 45,610
Int. Cl.³ G01D *9/00*
U.S. Cl. 346—22 **10 Claims**

1. A time verification apparatus useful for operating a time stamping mechanism upon introduction of an article into the apparatus, comprising a magazine having an aperture for receiving an article, a storage channel in the magazine, a plurality of moveable, similary shaped containers each having an article receiving opening, stored in the storage channel, a rotatable driver for receiving the containers one at a time from one end of the storage channel in a conveying zone, retaining each container in the conveying zone with the opening adjacent said aperture and for delivering each container to the other end of the storage channel as the driver is rotated, whereby a container located adjacent the aperture for the reception of the article is conveyed into said other end of the storage channel, pushing the other containers in the storage channel along the storage channel and pushing a container located at said one end of the storage channel into the conveying zone of the driver which, when further rotated transports the latter container adjacent the aperture; and further including a manually operable indexing wheel kinetically linked with the rotatable driver for rotating said driver and for operating said time stamping mechanism.

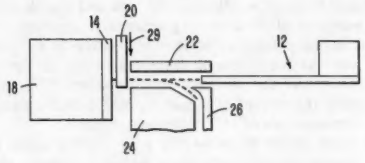


4,266,231

INK JET WITH RETRACTABLE ELECTRODE AND SECONDARY INK CATCHER

Gary A. Drago, Longmont; Arthur L. Mix, Jr., and Robert T. Ritchie, both of Boulder, all of Colo., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,368
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **19 Claims**



1. An ink jet printer comprising in combination:

a print head, having a cavity with a printing fluid therein and at least one orifice interconnecting the cavity with the face of the print head, said orifice being operable to convey a thread-like stream of ink from which a plurality of ink droplets are being generated and are being propelled along a flight path for printing on a media;

a movable charge electrode positioned relative to the flight path;

means for moving said charge electrode;

a thin tube-like device positioned relative to the droplets flight path and operable for catching the ink; and

means for moving the thin tube-like device from a first position along a path parallel to the droplets flight path to a second position next to the face of the print head.

4,266,232

VOLTAGE MODULATED DROP-ON-DEMAND INK JET METHOD AND APPARATUS

Anthony Juliana, Jr.; Richard W. Koepcke, both of San Jose; Ross N. Mills, and Frank E. Talke, both of Morgan Hill, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1979, Ser. No. 53,468
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **7 Claims**

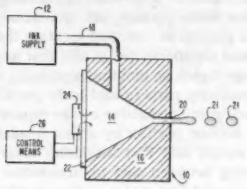
1. A drop-on-demand ink jet printer comprising a selectively actuable print head for selectively projecting drops of ink of substantially uniform size and spacing at a predetermined rate

toward a print medium to produce a desired print pattern thereon comprising:

a print head comprising a body member having a cavity with a nozzle portion at one end and a selectively actuable transducer in physical communication with a wall portion of said cavity;

means for supplying ink to said cavity;

voltage pulse means for selectively energizing said transducer to project a drop of ink of predetermined substantially uniform size from said nozzle portion toward a print medium only when said voltage pulse amplitude equals or exceeds a predetermined drive amplitude;



a source of print data; and

means for controlling said voltage pulse means in response to said print data to produce drive pulses at a predetermined rate but with selectively variable amplitude; said means for controlling producing a drive pulse at an amplitude lower than said predetermined drive amplitude when no drop is to be ejected and providing a drive pulse at an amplitude equal to or exceeding said predetermined drive amplitude when a first drop of said substantially uniform size is to be ejected following a time at which no drop was ejected.

4,266,233

I-C WAFER INCORPORATING JUNCTION-TYPE FIELD-EFFECT TRANSISTOR

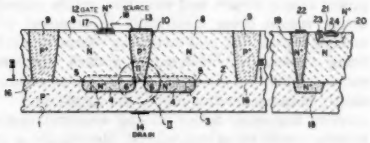
Franco Bertotti, Milan, and Mario Foroni, Valeggio sul Mincio, both of Italy, assignors to SGS ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed Dec. 14, 1979, Ser. No. 103,423

Claims priority, application Italy, Dec. 15, 1978, 30894 A/78

Int. Cl.³ H01L *29/80*

U.S. Cl. 357—22 **5 Claims**



1. A silicon wafer comprising a monocrystalline silicon substrate of one conductivity type, an epitaxially grown silicon stratum of the opposite conductivity type overlying said substrate, a buried layer of said opposite conductivity type embedded in said substrate in contact with said stratum, said buried layer having at least one enclave integral with said substrate and of said one conductivity type extending into contact with said stratum, a plurality of zones of said one conductivity type rising from said substrate to a surface of said stratum remote from said substrate, one of said zones overlying said enclave, another of said zones forming a barrier junction which separates a section of said stratum overlying said buried layer from other parts of said stratum, a first electrode on said remote surface in ohmic contact with said one of said zones, a second electrode on said remote surface in ohmic contact with said section of said stratum, and a third electrode in ohmic contact with said substrate, said enclave forming part of a channel of a field-effect transistor with a source, a gate and a drain respectively constituted by said first, second and third electrodes.

4,266,234

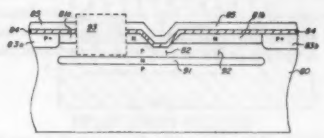
PARALLEL READOUT STRATIFIED CHANNEL CCD

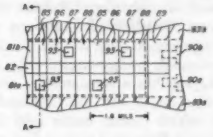
Larry J. Hornbeck, Van Alstyne, and Harold H. Hosack, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 16, 1978, Ser. No. 869,398

Int. Cl.³ H01L *29/78, 27/14, 31/00;* G11C *19/28*

U.S. Cl. 357—24 **10 Claims**





1. A charge coupled device comprised of:

(a) a semiconductor substrate having dopant atoms of a first conductivity type and a first surface;

(b) a plurality of parallel charge transfer channels spaced apart by separating regions, said channels and separating regions lying in said substrate near said first surface;

(c) an insulating layer lying over said charge transfer channels and separating regions;

(d) a plurality of phase electrodes serially disposed on said insulating layer transversely of said charge transfer channel;

(e) a barrier region in said substrate lying under and adjacent to all of said charge transfer channels and said separating regions, said barrier region having dopant atoms of said first type;

(f) a charge integration channel in said substrate lying under and adjacent to said barrier region, said charge integration channel having dopant atoms of a second conductivity type opposite to said first type; and

(g) inter-channel transfer means for varying the potential under selected portions of predetermined ones of said electrodes by a relatively large degree in comparison to the potential under the remaining portion of said predetermined electrodes, each selected portion respectively lying within only one channel to enable charge transfer from the charge integration region under the corresponding predetermined electrode to said respective one channel.

4,266,235

OPTOELECTRONIC SENSOR ACCORDING TO THE PRINCIPLE OF CARRIER INJECTION

Heiner Herbst, Haar; Hans-Jöreg Pfleiderer, Zorneding; Rudolf Koch, Germering-unterpfaffenhofen, and Jenöe Tihanyi, Munich, all of, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 962,893

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754549

Int. Cl.³ H01L *27/14*

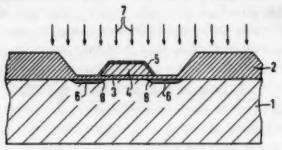
U.S. Cl. 357—30 **9 Claims**

1. In an optoelectronic sensor with a body formed of a doped semiconductor with a surface covered by a first insulating layer and having a first electrode formed on the first insulating

layer, a second insulating layer formed over the first electrode and the first insulating layer and a second electrode perpendicular to the first electrode formed on the second insulating layer, an improvement comprising:

a window with first and second inwardly oriented wedge-angled edges formed in said first insulating layer,

said first electrode is centered in said window on said first insulating layer, insulated from the body, and with first and second wedge-angled edges oppositely oriented to said inwardly oriented wedge-angled edges of said window, and



a region having the same type of conductivity as does the body but more strongly doped formed in the body at the surface thereof, substantially between a first inwardly oriented wedge-angled edge of said window and said first oppositely oriented, wedge-angled edge of said first electrode, said region has a substantially constant depth between said two edges and has first and second wedge-shaped ends which extend under said first edge of said window and said first edge of said first conductor.

4,266,236

TRANSISTOR HAVING EMITTER RESISTORS FOR STABILIZATION AT HIGH POWER OPERATION

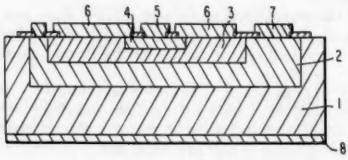
Kazuyoshi Ueda, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1979, Ser. No. 32,821

Claims priority, application Japan, Apr. 24, 1978, 53-48950

Int. Cl.³ H01L *29/72*

U.S. Cl. 357—34 **5 Claims**



1. A semiconductor device comprising a collector region of one conductivity type, a base region of the other conductivity type making contact with said collector region, an emitter region of said one conductivity type making contact with said base region and separated from said collector region, an additional region of said other conductivity type having its pheriphery surrounded by said emitter region, an emitter electrode electrically connected to said additional region, and at least one additional electrode separated from said emitter electrode and electrically short-circuiting said emitter region and said additional region.

4,266,237

SEMICONDUCTOR APPARATUS

Thomas E. Hendrickson, Wazata, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 7, 1979, Ser. No. 73,157

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—41 **14 Claims**

1. A semiconductor photodetector signal processing device for providing an output signal indicative of that amount of electromagnetic radiation impinging on a photodetector during a previous time duration, said photodetector signal processing device comprising:

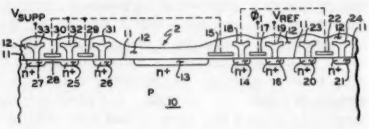
a semiconductor material body of a first conductivity type, in at least some parts of a first portion thereof serving as a substrate, and having a major surface such that said first body portion intersects said major surface in a first major surface portion;

said photodetector provided in a first location at said first major surface portion, said photodetector being capable of providing charge carriers near said first major surface portion at said first location in response to electromagnetic radiation impinging thereon;

a storage region of a second conductivity type provided in said first body portion and intersecting said first major surface portion at a second location therein spaced apart from said photodetector at said first location, there being a storage region pn junction separating said storage region and remaining parts of said body portion;

a reference gate conductive means separated from said first major surface portion by a first insulating layer and located across said first insulating layer from that space occurring between said photodetector and said storage region in said first major surface portion;

a reference means having an output region, said reference means being capable of providing a selected voltage po-



tential at said output region when said reference means is electrically energized, said reference means output region being electrically in common with said reference gate conductive means, said reference means being also electrically connected to a first interconnection means adapted for electrical connection to a first power supply means;

a switching means having first and second terminating regions and having a control region therein by which said switching means is capable of being directed to effectively provide a conductive path of a selected conductivity between said switching means first and second terminating regions, said switching means first terminating region being electrically connected to a second interconnection means adapted for electrical connection to a second power supply means, said switching means second terminating region being electrically in common with said storage region, and said switching means control region being electrically connected to a third interconnection means adapted for electrical connection to a third power supply means providing a periodic output; and

a transfer transistor device having an input region, said transfer means input region being electrically in common with said storage region and being at least part of an arrangement presenting a large electrical impedance thereto.

4,266,238

SEMICONDUCTOR DEVICE HAVING HIGH-SPEED OPERATION AND INTEGRATED CIRCUIT USING SAME

Jun-ichi Nishizawa, Sendai, Japan, assignor to Zaidan Hojin Handotai Kenkyu Shinkokai, Sendai, Japan

Filed Mar. 7, 1978, Ser. No. 884,214

Claims priority, application Japan, Mar. 11, 1977, 52/27377; Apr. 23, 1977, 52/47263

Int. Cl.³ H01L *27/04*

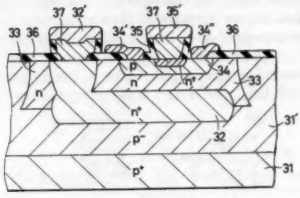
U.S. Cl. 357—48 **30 Claims**

1. A semiconductor device formed in a semiconductor chip and including at least one semiconductor element:

said element including first and second portions defining a controlled current path therebetween, and means for controlling current flow through said path, wherein said first portion comprises;

a first semiconductor region having a predetermined impurity concentration said device including:

a second semiconductor region of a second predetermined impurity concentration disposed outside of and in the neighborhood of said first semiconductor region; and



a third semiconductor region disposed between said first and second semiconductor regions, said third semiconductor region having a predetermined width and a conductivity type opposite to at least one of said first and second semiconductor regions and forming a P-N junction therewith, said third semiconductor region having an impurity concentration lower than said first and second predetermined impurity concentration, and; means, including said P-N junction for generating a depletion layer in said third semiconductor region to substantially deplete said third semiconductor region.

4,266,239

SEMICONDUCTOR DEVICE HAVING IMPROVED HIGH FREQUENCY CHARACTERISTICS

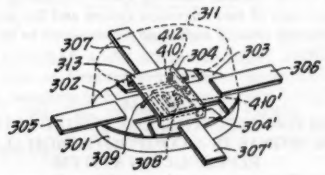
Katsunori Miyagaki; Shozo Noguchi, and Yukio Hirakawa, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 783,743, Apr. 1, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,144

Claims priority, application Japan, Apr. 5, 1976, 51-38060

Int. Cl.³ H01L *25/04, 29/34, 29/40*

U.S. Cl. 357—84 **12 Claims**



1. A semiconductor device comprising:

an insulator substrate having a major surface;

first, second and third metal layers disposed on said major surface of said insulator substrate and mutually separated from each other, said first metal layer serving as an input terminal, said second metal layer serving as an output terminal, and said third metal layer serving as a common terminal;

a semiconductor chip having a bottom surface and an upper surface and bonded at said bottom surface on said second metal layer, the upper surface of said semiconductor chip including an input electrode and a common electrode.

a first bonding wire connected at one end to said first metal layer and at its other end to said input electrode of said semiconductor chip;

a second bonding wire connected at one end to said third metal layer and at its other end to said common electrode of said semiconductor chip;

a piece of conductive metal covering said first and second bonding wires, said semiconductor chip, and the smallest space between said first and second metal layers;

a supporting member mechanically supporting said piece of conductive metal in a manner such that said piece of conductive metal is spaced from said bonding wires and from said semiconductor chip;

means for supplying a fixed potential to said piece of conductive metal; and

a molded resin enclosing said piece of conductive metal, said semiconductor chip, and said bonding wires and attached to said piece of conductive metal and to at least a portion of said major surface of said insulator substrate.

4,266,240

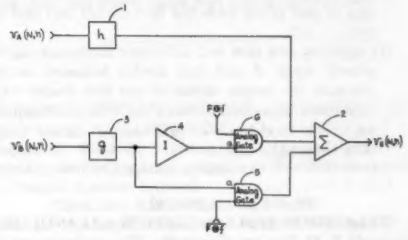
TELEVISION SYSTEM

Paul M. Levy, 3 Butternut Ct., Dix Hills, N.Y. 11746

Continuation-in-part of Ser. No. 20,874, Mar. 15, 1979, abandoned. This application Jul. 20, 1979, Ser. No. 59,322

Int. Cl.³ H04N *9/60*

U.S. Cl. 358—3 **82 Claims**



1. A television system comprising:

(a) means for providing a first video signal;

(b) means for providing a second video signal in time synchronism with said first video signal;

(c) encoding means for forming a composite video signal of said first video signal and said second video signal, said encoding means including means for amplitude scaling said first video signal and said second video signal and means for alternating the polarity of said amplitude scaled second video signal; and

(d) means for transmitting said composite video signal to means for receiving said composite video signal, said receiving means including means for decoding said second video signal from said received composite video signal, said decoding means including means for amplitude scaling said received composite video signal and means for delaying said amplitude scaled received composite video signal.

4,266,241

COLOR SIGNAL ENCODING METHODS AND APPARATUS FOR VIDEO RECORDING AND PLAYBACK

Bernhard A. Hjortzberg, Mission Viejo, Calif., assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 766,541, Feb. 7, 1977, Pat. No. 4,123,774. This application Aug. 9, 1978, Ser. No. 932,367

Int. Cl.³ H04N *5/92*

U.S. Cl. 358—4 **99 Claims**

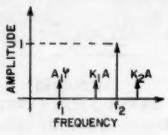
1. A method of processing a color video signal in which quadrature modulated chroma information amplitude modulated at a first carrier frequency is translated to bisequential

chroma information amplitude modulated at a second carrier frequency with suppressed carrier, comprising the steps of:

(a) separating a signal representing said amplitude and quadrature modulated chroma information from said color video signal;

(b) applying said separated chroma information signal to one input of a first double balanced modulator;

(c) switching the phase of a reference source of said first carrier frequency from one horizontal video scan line to the next alternately between a first angle and a second angle departing from said first angle by ninety degrees;



(d) mixing said phase switched first carrier reference with a reference source of said second carrier frequency to produce a signal comprising the sum and difference frequencies of said phase switched first carrier and said second carrier; and

(e) applying said sum and difference frequency signal to a second input of said first double balanced modulator, whereby the output signal of said first double balanced modulator represents chroma information bisequentially amplitude modulated at said second carrier frequency with suppressed carrier.

4,266,242

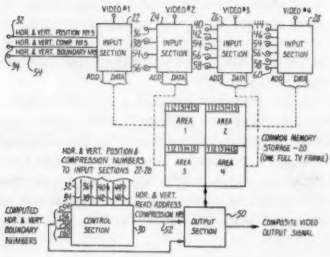
TELEVISION SPECIAL EFFECTS ARRANGEMENT

Reginald F. H. McCoy, Gainesville, Fla., assignor to Vital Industries, Inc., Gainesville, Fla.

Continuation of Ser. No. 888,741, Mar. 21, 1978, abandoned. This application Apr. 25, 1979, Ser. No. 33,142

Int. Cl.[3] H04N *9/535, 5/22*

U.S. Cl. 358—22 **96 Claims**



1. A video special effects generator comprising memory storage means having a plurality of addressable storage areas corresponding to different areas of a desired composite output image, first and second video signal sources, means for digitizing the picture elements of one full frame of each of said sources, means for developing addresses corresponding to storage areas of said memory storage means at which picture elements from both said sources are to appear in said desired composite output image, means controlled by said address developing means for storing said digitized elements in said memory means, and means for reading said digitized picture elements from said storage means in a predetermined sequence and developing an analog video signal corresponding thereto.

4,266,243

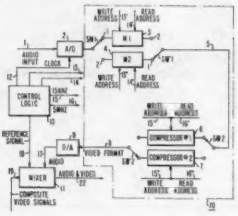
SCRAMBLING SYSTEM FOR TELEVISION SOUND SIGNALS

Harold B. Shutterly, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 25, 1979, Ser. No. 33,065

Int. Cl.[3] H04N *7/16, 7/04, 7/08*

U.S. Cl. 358—121 **4 Claims**



1. In a television system having a transmitter, a receiver and a communication channel for processing video signals, an audio-scrambler apparatus for a continuous audio signal to be transmitted through said television system comprising:

means for dividing said continuous audio signal into consecutive audio segments of a predetermined length;

first means for cylically rotating each of said divided segments in accordance with a pseudo-random pattern to derive rotated audio segments: second means for subdividing said rotated segments into subsegments and for compressing each of said subsegments down to the length of a video line of said television system;

scrambling means responsive to said compressed subsegments and to the video signals of said television system for cyclically rotating each of said compressed subsegments in time concurrence with the vertical blanking pulse of said television system and for cyclically rotating each video signal in time concurrence with the video lines, in accordance with another pseudo-random pattern to derive rotated compressed audio signals and rotated video signals; and

third means responsive to the vertical blanking pulse of said television system for inserting each of said rotated compressed audio signals as a video line into a corresponding one of the vertical blanking spaces separating the active video lines of said television system and for generating a composite rotated audio and video signal to be transmitted.

4,266,244

SYSTEM FOR DETECTING THE INITIAL POINT OF A DIGITAL SIGNAL IN A COMPOSITE DIGITAL SIGNAL REPRODUCING SYSTEM

Yasuo Itoh, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 20, 1979, Ser. No. 77,490

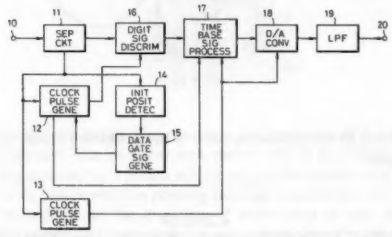
Claims priority, application Japan, Sep. 22, 1978, 53/117270

Int. Cl.[3] H04N *7/00*

U.S. Cl. 358—142 **6 Claims**

1. A system for detecting the initial point of a digital signal in a composite digital signal reproducing system, said composite digital signal comprising a composite synchronizing signal having horizontal synchronizing signals, vertical synchronizing signals and equalizing pulses which are the same as the composite synchronizing signal of a composite video signal composed of odd fields and even fields, and a digital signal having information interposed between said composite synchronizing signals, said reproducing system having means for separating said composite digital signal into said composite synchronizing signal and said digital signal, means for writing-in and reading-out the digital signal thus separated to carry out

processing of said digital signal on a time base, and clock pulse generation means for supplying writing-in and reading-out clock pulses to said signal processing means, said detecting system comprising: means for generating a first train of pulses having pulse width τ_1 defined by $0.5H<\tau_1<1H$, where H denotes a horizontal scanning period, and responsive to said composite synchronizing signal separated by said separation means; means for generating a second train of pulses having pulse width τ_2 defined by $\tau_2<0.5H$ and responsive to said composite synchronizing signal separated by said separation means; means supplied with said second pulses train generated from said second pulse train generation means and said composite synchronizing signal separated by said separation means, for producing as output a signal corresponding to the vertical synchronizing signal in said composite synchronizing signal; means for receiving said first pulse train and for frequency



dividing said first pulse train thus received; means, supplied with said composite synchronizing signal thus separated and the signal corresponding to said vertical synchronizing signal, for producing as output a signal which rises responsive to an initial equalizing pulse following the pulse corresponding to said vertical synchronizing signal and conversely falls whereupon it is supplied with the output of said frequency dividing means, and for supplying said output signal to said frequency dividing means for enabling it to perform frequency dividing operation; and means for producing as output, responsive to the output signal of said frequency dividing means and the horizontal synchronizing signal in said composite synchronizing signal, a control signal in responsive correspondence with the initial point of the digital signal in said composite digital signal, and for supplying the resulting output signal to said clock pulse generation means.

4,266,245

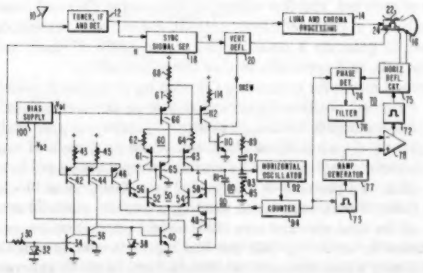
DIFFERENTIAL AMPLIFIER CURRENT REPEATER

Alvin R. Balaban, Lebanon, and Steven A. Steckler, Clark, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jan. 29, 1980, Ser. No. 116,624

Int. Cl.³ H04N *5/04*

U.S. Cl. 358—153 **9 Claims**



1. In a differential amplifier including first and second emitter coupled transistors responsive to an input signal applied to one of the base electrodes of said first and second transistors, and a current source transistor having its collector-to-emitter path serially coupled between said coupled emitters of said first and second transistors and a point of reference potential; a current repeater circuit coupled between the collector electrodes of said first and second transistors which comprises:

a current mirror for replicating the collector current of said first transistor, including third and fourth transistors having respective collector electrodes coupled to the collector electrodes of said first and second transistors, respectively, the base electrode of said third transistor being coupled to the base electrode of said fourth transistor, and a resistor for coupling the emitter electrode of at least one of said third and fourth transistors to a source of supply voltage, wherein the collector current of said first transistor is substantially replicated by the collector current of said fourth transistor; and a fifth transistor having its collector-to-emitter path serially coupled between said base electrodes of said third and fourth transistors and said resistor,

wherein said fifth transistor is biased to conduct a given magnitude of current when said third and fourth transistors are nonconductive and to lessen its conduction when said third and fourth transistors are conducting current.

4,266,246

CONTINUOUS MOTION TELECINE APPARATUS AND METHOD

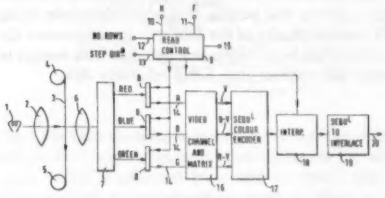
Christopher J. Waldron, Harston, and Raymond Matchell, Braughing, both of England, assignors to The Rank Organisation Limited, London, England

Filed Jan. 3, 1980, Ser. No. 109,269

Claims priority, application United Kingdom, Jan. 4, 1979, 00229/79

Int. Cl.³ H04N *3/36, 9/11*

U.S. Cl. 358—216 **8 Claims**



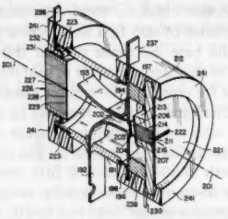
1. A method of deriving a television signal representing picture information on a cinema film, the method comprising transporting the film frame-by-frame with continuous motion relative to a matrix of photo-sensitive devices arranged in a plurality of parallel rows, focussing an image of the moving film on the matrix, the rows of the matrix being disposed substantially perpendicular to the direction of motion of the image, and scanning the image of each film frame during its movement across the matrix by interrogating the matrix at a desired line frequency along a plurality of rows thereof with the said interrogation being stepped from one row of the matrix to the next at successive instants during the scanning, thereby to derive from substantially the entire height of each film frame or a desired part thereof a desired number of scanned lines of electrical picture information different from the number which would be obtained if the scanning were performed along only a single row of the matrix, the method further comprising processing the scanned lines so derived to provide a television signal conforming to a desired standard.

4,266,247

PROXIMITY FOCUSED STREAK TUBE AND STREAK CAMERA USING THE SAME

Howard D. Sutphin, and Albert J. Lieber, both of Los Alamos, N. Mex., assignors to General Engineering & Applied Research, Palo Alto, Calif.

Filed Sep. 19, 1977, Ser. No. 834,561
Int. Cl.[3] H04N 5/30
U.S. Cl. 358—217 6 Claims



1. In a proximity focused streak tube, a photocathode for converting photon images into photoelectrons, a phosphor screen for receiving said photoelectrons, said photocathode and said screen defining a longitudinal tube axis, a channel plate having a plurality of substantially parallel bores therein, the channel plate being disposed in relatively close proximity to the photocathode and so that the bores in the channel plate are inclined at an angle with respect to the longitudinal tube axis, means for applying a voltage differential between the photocathode and the channel plate to cause electrons to be extracted from the photocathode and travel in paths through the bores in said channel plate, the bores in the channel plate being arranged so that said photons cannot pass directly from said photocathode directly through said channel plate to said phosphor screen, first and second spaced apart beam electrodes disposed between the channel plate and the phosphor screen and means for applying a voltage differential between said beam electrodes to cause the photoelectrons to move in directions across said screen, said beam electrodes being arranged asymmetrically of the tube axis to compensate for the inclination of the bores in the channel plate with respect to the tube axis, said channel plate being relatively thin.

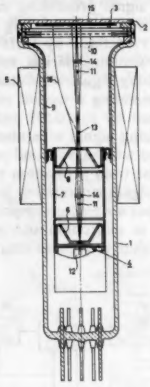
4,266,248

DEVICE HAVING A CAMERA TUBE

Johannes H. T. Van Roosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 14, 1978, Ser. No. 942,323
Claims priority, application Netherlands, Oct. 18, 1977, 7711392
Int. Cl.[3] H04N 5/30
U.S. Cl. 358—223 2 Claims

1. An apparatus having a camera tube of the vidicon type including a radiation-sensitive layer, an electron gun for generating an electron beam, means for focusing the electron beam, and means for deflecting the electron beam over the radiation-sensitive layer, said tube further including means for directing the deflected electron beam perpendicularly onto the radiation-sensitive layer, the improvement wherein the focusing means focuses the electron beam substantially at a spot corresponding to the deflection point of the deflection means during flyback.

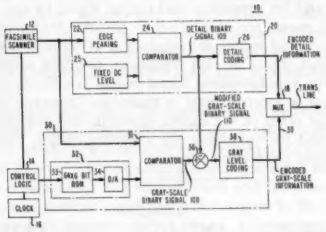


4,266,249

DIGITAL ENCODER FOR FACSIMILE TRANSMISSION

Soo Young Chai, Holmdel; Helmuth O. Sautter, and Wallace E. Sherbon, both of Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sep. 19, 1978, Ser. No. 943,734
Int. Cl.[3] H04N 7/12
U.S. Cl. 358—260 28 Claims



1. Apparatus for digitally encoding continuous-tone information from an original pictorial image having a total pictorial area (100) comprising means for scanning (12) discrete areas of said original image known as pels (102) on a line-by-line basis to generate input electrical signals indicative of the light intensity of each pel, and first means for comparing (24) said input signals to a predetermined position-independent threshold signal to generate a detail binary signal (109) of black and white pels, said apparatus further characterized by:

second means for comparing (31) said input signals to predetermined position-dependent reference threshold signals from a matrix of sample points to generate a gray-scale binary signal (108) of black and white pels, each of said sample points assigned by position to a particular pel from each of a plurality of subdivided two-dimensional blocks (104) of pels, each block forming a discrete pictorial area of the total pictorial area (100) of said original image; and

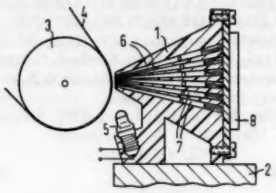
means for counting (42) the black pels in said gray-scale binary signal for each two-dimensional block to generate a value "N", which approximates the gray-level information of each subdivided block of pels.

4,266,250

ARRANGEMENT FOR THE OPTOELECTRICAL SCANNING OF A MASTER

Joachim Heinzl, Munich, and Erich Kattner, Neubiberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich

Filed Sep. 20, 1978, Ser. No. 944,156
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1977, 2748266
Int. Cl.[3] H04N 1/06
U.S. Cl. 358—285 4 Claims



1. In an arrangement for optoelectrical scanning of a plurality of parallel lines of a row on a master which is carried, at a printing station, by a platen which moves the master in a first direction, and in which a printing carriage is provided to move perpendicularly to the direction of movement of and transversely across the master, the improvement therein comprising:

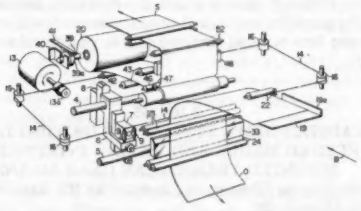
a scanning device mounted on said carriage for movement therewith and including a scanning head and plurality of scanning elements mounted in said scanning head at positions similar to that of printing elements of a mosaic printing head; and said scanning head including a plurality of light tunnels which direct light from the scanned points of the master to said scanning elements.

4,266,251

FACSIMILE TRANSMISSION AND RECEPTION APPARATUS

Kazuyuki Hara, Yokohama, and Takeshi Kamada, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Feb. 21, 1979, Ser. No. 13,412
Claims priority, application Japan, Feb. 23, 1978, 53-20334
Int. Cl.[3] H04N 1/12
U.S. Cl. 358—286 14 Claims



1. Facsimile apparatus comprising:

an insertion inlet through which to insert original documents into said apparatus, each of said documents having an image information side and being inserted into said insertion inlet with said image information side facing up;

collection means lower than said inlet to accumulate said original documents;

channel means comprising a channel to direct the original documents from said inlet to said collection means and to cause said original documents to stack up at said collection means in the same order in which they were inserted into said insertion inlet and with the image information side facing down;

transducing means comprising photosensitive means and optical means to produce, on said photosensitive means, an optical image of a predetermined object area of a portion of said channel means;

carrier means for transporting said transducing means in a main scanning direction to scan said object area across a predertmined part of said channel; and

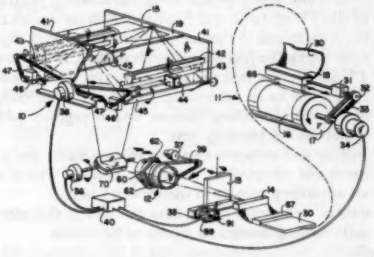
transportation means to transport each of said original documents in a controlled manner along a sub-scanning direction past said predetermined part of said channel and with the image information side facing in a direction to have an image thereof focused by said optical means on said photosensitive means.

4,266,252

LENS SYSTEM FOR DOCUMENT SCANNING

Arthur Cox, Chicago; John A. Thiel, Wheeling, both of Ill., and Eugene Nodov, Richardson, Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Sep. 12, 1979, Ser. No. 75,067
Int. Cl.[3] H04N 1/10; G02B 9/62
U.S. Cl. 358—293 10 Claims



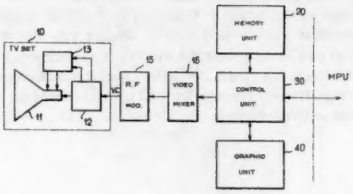
1. In a flat field scanning system comprising means for illuminating a flat document plane, a scanning mirror for scanning the light which is reflected from said document plane and directing it along an optical path toward an image sensor, a movable doublet lens for collimating the light rays traversing said path, motive means for moving said movable doublet lens along said path in synchronism with the movement of said scanning mirror so as to maintain the focal plane of said doublet lens coincident with the portion of said document plane being viewed by said image sensor, and imaging means for receiving said collimated light and imaging said portion of said document plane upon said image sensing means; the improvement wherein said imaging means has a plane of symmetry which is perpendicular to said optical path and further wherein said imaging means comprises a pair of identical double concave lenses arranged symmetrically with respect to said plane of symmetry, a pair of identical first meniscus lenses opposing said double concave lenses in symmetrical relationship with respect to said plane of symmetry, a pair of identical second meniscus lenses opposing said first meniscus lenses in symmetrical relationship with respect to said plane of symmetry, and a fixed position doublet lens identical to said movable doublet lens and opposing that one of said second meniscus lenses which is remote from said movable doublet lens.

4,266,253

PROCESSOR FOR A GRAPHIC TERMINAL

Philippe Matherat, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 16, 1979, Ser. No. 39,279
Claims priority, application France, May 18, 1978, 78 14767
Int. Cl.[3] H04N *1/00*; G09F *9/30*
U.S. Cl. 358—903 **15 Claims**



1. A digital MOS processor connected on to a command unit and to a TV set enabling: in a writing mode, the data of a graphic image to be produced and stored in an external memory unit and, in a reading mode, these stored data to be read and displayed on the CRT screen of the TV set; characterised in that, on a single microchip of a semi-conductor substrate, it comprises:

a two-way data bus comprising input/output means and terminals enabling it to be connected to the command unit;

an address bus comprising means enabling it to be connected to the command unit;

terminals carrying signals allowing dialogue with the command unit;

a control unit which produces signals enabling the time bases of the TV set to be synchronized, address signals enabling the data stored in the memory unit to be read, signals for controlling the luminance levels of the CRT screen of the TV set and internal timing signals; this control unit being connected to an external clock circuit comprising a dot clock and a dividing counter which supplies addressing signals to the memory unit;

a graphic unit comprising a symbol generator and a vector generator coupled to a writing pointer which supplies write address signals to the memory unit;

a register connected to the data bus and to the address bus and enabling command words to be stored;

a plurality of registers connected to the command bus and to the address bus and enabling data words to be stored;

a first multiplexer connected to the control unit and to the graphic unit and enabling the reading and writing address signals of the memory unit to be multiplexed in dependence upon the mode of operation (reading or writing) of the processor;

a second multiplexer connected to the first multiplexer and enabling the low part and the high part of the writing addresses and reading addresses to be multiplexed at the rate of the internal clock signal;

a third multiplexer connected to the control unit and to the graphic unit and enabling certain of the reading and writing address signals to be connected according to the format of the TV image;

a reading means connected to the control unit and enabling a dot of the graphic image displayed on the CRT screen of the TV set to be read; this reading means comprising a register connected to the data bus which enables the data of the address of the displayed dot to be stored, a means for forcing the graphic image to the "white" level, a means for reading the content of the register and a means for indicating the busy state of this reading means;

an interruption element comprising a means for producing a word indicating the state of the graphic unit, a masking means controlled by masking bits contained in the control register, a means for recording the state word connected to the data bus and to the address bus and comprising means for reading this recording means,

synchronizing means for synchronizing a means for decoding the command words stored in the command register,

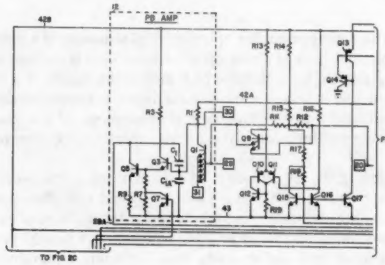
an erasing means enabling the data of the graphic image stored in the memory unit to be erased or a continuous background to be stored in the memory unit, the control unit comprising means enabling the format (interlaced frames or paired frames) of the TV image to be modified.

4,266,254

INTEGRATED CIRCUIT FOR RECORDING AND PLAYBACK OF SUCH RECORDING

Stephen W. Hobrecht, Sunnyvale, Calif.; Henry M. Skawinski, Craigmount, Hong Kong; Kh Chiu, Kowloon, Hong Kong, and Wong Hee, Kowloon, Hong Kong, assignors to National Semiconductor Corp., Santa Clara, Calif.

Continuation of Ser. No. 803,473, Jun. 6, 1977. This application May 7, 1979, Ser. No. 36,696
Int. Cl.[3] G11B *15/12*
U.S. Cl. 360—62 **50 Claims**



1. In a playback/record magnetic tape recorder system, a single tape head, an integrated electronic switching circuit comprising audio playback amplifier means coupled to said single tape head for playing back previously recorded audio material, audio recording amplifier means coupled to said single tape head for recording audio material, single single pole switching means for selecting between playback and record modes of operation, and logic means connected to said single pole switching means for selectively operating one of said audio playback amplifier means and said audio recording amplifier means, said logic means comprising first transistor device means for operating said audio playback amplifier means, second transistor device means for operating said audio recording amplifier means, and third transistor device means for selecting between said first and said second transistor device means.

4,266,255

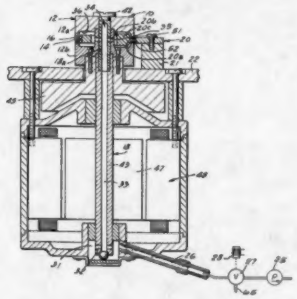
CAPSTAN DRIVE SYSTEM FOR DRIVING TAPE RECORD MEDIA, AND HAVING INTERNALLY MOUNTED TRANSDUCER HEAD MEANS

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Apr. 26, 1978, Ser. No. 900,078
Int. Cl.[3] G11B *15/60, 15/64*
U.S. Cl. 360—90 **8 Claims**

1. A tape transducer system comprising a driving capstan having a rotatable tape engaging capstan surface for driving engagement with an inner surface of a tape record medium wrapped on the capstan to produce uniform movement of the record medium substantially at a speed corresponding to the speed of said capstan surface, and having a capstan annular slot in said surface, stationary transducer head means in said annular slot and having a stationary coupling means at the capstan surface and at a fixed scanning location for coupling with a

tape record medium as it is being driven by the capstan surface so as to transduce information between a recorded form on the record medium and a signal form at said transducer head means, and said transducer head stationary coupling means at said fixed scanning location scanning the tape record medium along a longitudinal track of the record medium and at a relative scanning speed substantially corresponding to the speed of said capstan surface, said annular slot in said capstan surface being of configuration to accommodate the transducer head stationary coupling means therein at said fixed scanning location and in scanning engagement with an inner surface of a tape record medium wrapped partially about the capstan, and said annular slot providing clearance between the capstan and said transducer head coupling means so that the capstan can be rotated while the transducer head coupling means is stationary in said annular slot, stationary slot obstructing means angularly offset from said fixed scanning location and extending in obstructing relation to portions of said annular slot remote from said stationary coupling means and which portions are not



covered by a tape record medium wrapped on the capstan during operation and defining with said capstan an interior chamber in communication with the inner side of a tape record medium wrapped on the capstan in the vicinity of said stationary transducer head coupling means, such that during operation a substantial differential pressure can be established between the inner and outer sides of a tape record medium wrapped on said capstan, and a vacuum pump for communication with the interior chamber of the capstan for establishing said substantial differential pressure between the inner and outer sides of a tape record medium partially wrapped about said capstan and covering a part of the circumferential extent of said annular slot and such differential pressure being of a substantial magnitude over at least about one-half of the perimeter of said annular slot such that the tape record medium is held in an essentially non-slipping engagement with said capstan surface at both sides of said annular slot over at least about one-half of the perimeter of said annular slot at the part of the angular extent of said annular slot remote from said stationary slot obstructing means.

4,266,256

CLEANER RIBBON FOR MAGNETIC TAPE

Katsuhiko Kato, Hiratsuka, and Tosaku Kojima, Yokohama, both of Japan, assignors to Hitachi, Ltd., Japan

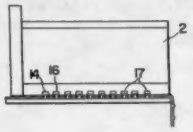
Filed Jun. 22, 1978, Ser. No. 918,271

Claims priority, application Japan, Jun. 24, 1977, 52-74345

Int. Cl.[3] G11B *5/41, 23/50, 3/58*

U.S. Cl. 360—128 **8 Claims**

1. A cleaner ribbon for a magnetic tape used in a head/tape cleaning device in a magnetic tape apparatus which consists of a composite material comprising a nylon non-woven fabric as a substrate which has a plurality of projections, adapted to fit the track grooves of a magnetic head, on its surface adjoining the magnetic head and which has a paper material layer attached onto the surface of said substrate opposite to the surface having the projections, said paper material being attached to said surface of said substrate with an adhesive, said paper



material being a material capable of cleaning said magnetic tape.

4,266,257

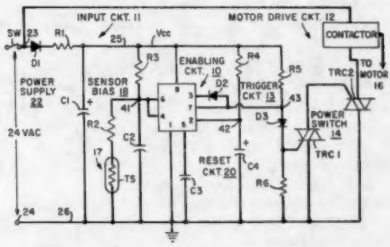
MOTOR OVER-HEATING PROTECTION CIRCUIT

George Rudich, Jr., Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Oct. 2, 1978, Ser. No. 947,569

Int. Cl.[3] H02H *7/08, 5/04*

U.S. Cl. 361—27 **5 Claims**



1. In an overheating protection circuit for a motor, including switching means operable to connect power to the motor and sensing means for sensing the temperature of the motor, a control circuit for controlling the operation of said switching means comprising: sensor bias means connected in circuit with said sensing means for providing a control signal indicative of the temperature of said motor as sensed by said sensing means; enabling means having output means operable when enabled to provide a signal to effect the enabling of said switching means to connect power to said motor, including signal level detecting means operable when the amplitude of said control signal increases to at least a preselected value, indicative of overheating of the motor, to disable said output means to thereby cause said switching means to disconnect power from said motor; reset circuit means for enabling said output means and including timing circuit means operable upon application of power thereto to generate a start signal defining an enabling interval, said reset circuit means preventing re-enabling of said output means after said enabling interval independent of the state of said enabling means following disconnection of power from said motor as the result of an over-heating condition, and for so long as power continues to be applied to said control circuit.

4,266,258
CURRENT LIMITING DEVICE FOR HIGH VOLTAGE SWITCHING MECHANISMS

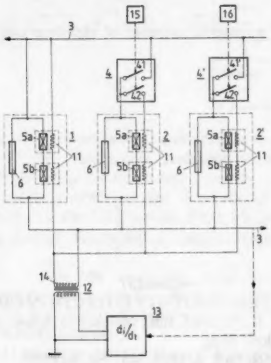
Adolf Eidinger, Nussbaumen; Carl D. Flössel, Fislisbach; Georg Köppl, Birr; Alfred Ulrich, Döttingen, and Hans Schibli, Bremgarten, all of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

Filed May 7, 1979, Ser. No. 36,700

Claims priority, application Switzerland, Jan. 25, 1979, 734/79

Int. Cl.³ H02H *7/22*

U.S. Cl. 361—58 **4 Claims**



1. A current limiting device for high voltage switching mechanisms, comprising:

first and second high voltage busbars having contact jacks;

a first fast-acting circuit breaker having an explosive conductor containing an explosive charge which breaks the conductor when actuated and a fusible conductor connected in parallel with the explosive conductor through which current is commutated and interrupted when the explosive conductor is broken, said first circuit breaker also having contact plugs to thereby enable said first circuit breaker to be readily connected to and disconnected from said busbars while current is flowing through them; and

a switching unit including a second fast-acting circuit breaker having an explosive conductor with an explosive charge and a fusible conductor, a reconnect switch having main contacts for supplying current to said second circuit breaker and auxiliary contacts for supplying power to an ignition device for the explosive charge of said second circuit breaker prior to closure of said main contacts, and contact plugs to thereby enable said switching unit to be readily connected to and disconnected from said busbars while current is flowing through them.

4,266,259
LONG-TIME AND SHORT-TIME OVERCURRENT SIGNAL PROCESSOR FOR CIRCUIT BREAKER STATIC TRIP UNITS

Edward K. Howell, Simsbury, Conn., assignor to General Electric Company, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,375

Int. Cl.³ H02H *3/093*

U.S. Cl. 361—97 **17 Claims**

1. In a circuit breaker static trip unit having at least one current transformer for developing a secondary winding current proportional to a distribution circuit phase current flowing in its primary, a rectifier for rectifying the secondary current, and a detector circuit for developing an overcurrent signal proportional to the rectified secondary current; signal processing circuitry comprising, combination:

A. a long-time trip mode network including

(1) adjustable first means for establishing a selected long-time pickup level against which said overcurrent signal is measured,

(2) a first squaring circuit for adjustably developing a first charging current proportional to the square of said overcurrent signal,

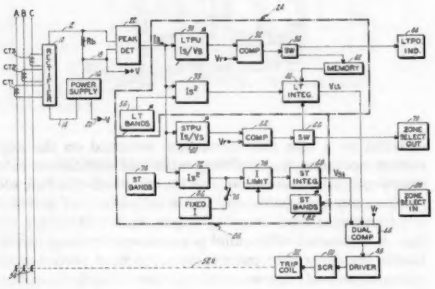
(3) a first integrating capacitor connected to be charged by said first charging current pursuant to developing a first time varying voltage signal, and

(4) first switch means conditioned by said first means to shunt said first charging current from said first capacitor while said overcurrent signal is below said long-time pickup level and to direct said first charging current through said first capacitor while said overcurrent signal exceeds said long-time pickup level;

B. a short-time trip mode network including

(1) adjustable second means for establishing a selected short-time pickup level against which said overcurrent signal is measured,

(2) a second squaring circuit for developing a second charging current proportional to the square of said overcurrent signal,



(3) a second integrating capacitor connected to be charged by said second charging current pursuant to developing a second time varying voltage signal,

(4) second switch means conditioned by said second means to

(a) shunt said second charging current from said second capacitor while said overcurrent signal is below said short-time pickup level,

(b) direct said second charging current through said second capacitor while said overcurrent signal exceeds said short-time pickup level, and

(c) shunt said first charging current from said first capacitor while said overcurrent signal exceeds said short-time pickup level, and

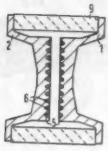
(5) adjustable fixed short-time delay means responsive to said second charging current for limiting the magnitude thereof to a pre-selected fixed level; and

C. Comparator means responsive to said first and second time varying voltage signals for issuing a circuit breaker trip initiating signal when either of said voltage signals achieves a predetermined reference voltage level.

4,266,260
SURGE ARRESTER

Gerhard Lange, and Juergen Boy, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,606
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1978, 2828650
Int. Cl.[3] H02H *9/06*
U.S. Cl. 361—120 12 Claims



1. In a surge arrester of the type in which a first electrode and a second electrode are sealed gas-tight in opposite ends of a tubular gas-filled insulating body, in which each electrode has a stepped truncate conical shape with an end wall with an end surface spaced from the like end surface of the end wall of the other electrode and the end wall having a thickness greater than that of the side wall, the improvement therein comprising:

recess means defining recesses in the end surface; and

an activating substance in the recesses comprising aluminum powder and magnesium oxide.

4,266,261
METHOD AND APPARATUS FOR OPERATING AN ELECTROMAGNETIC LOAD, ESPECIALLY AN INJECTION VALVE IN INTERNAL COMBUSTION ENGINES

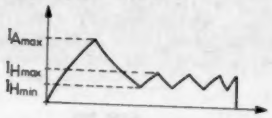
Klaus Streit, Tübingen; Klaus Harsch, Ditzingen, and Peter Schülzke, Hemmingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

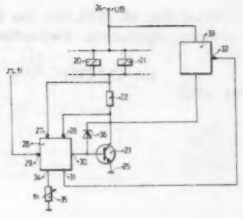
Filed Jun. 25, 1979, Ser. No. 51,588
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1979, 2828678
Int. Cl.[3] H01H *47/32*
U.S. Cl. 361—154 29 Claims

1. A method of operating an electromagnetic load device including a movable armature, in particular the injection valve of an internal combustion engine, comprising the steps of:

(a) applying a high amperage starting current to the load device as a result of which the armature is set into motion;

(b) reducing the magnitude of the current before the armature reaches its final position; and



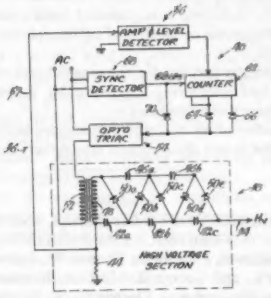


(c) varying the current to the load thereafter such that any current rise is less than the starting current.

4,266,262
VOLTAGE CONTROLLED POWER SUPPLY FOR ELECTROSTATIC COATING APPARATUS

Martin O. Haase, Jr., Boulder, Colo., assignor to Binks Manufacturing Company, Franklin Park, Ill.

Filed Jun. 29, 1979, Ser. No. 53,372
Int. Cl.[3] B05B *5/02*
U.S. Cl. 361—228 14 Claims



1. Apparatus for electrostatically depositing coating material on an article, comprising a source of unidirectional high potential having an input for receiving input power and an output whereat the unidirectional high potential is generated; a charging electrode connected to said source output to establish an electrostatic field between said electrode and the article; means for atomizing coating material into the electrostatic field for movement toward the article in response to the electrostatic field, the distance between said charging electrode and the article being subject to variations which can cause a change in the potential gradient between said electrode and the article and a change in a current flow to said electrode from said source; and means for monitoring the value of the current flow to said electrode and for controlling application of input power to said source in accordance therewith, said monitoring and controlling means continuously connecting input power to said source input upon the current flow to said electrode having less than a predetermined value so that the unidirectional high

potential has a full value, and cyclically interrupting application of input power to said source input so that only a portion and less than all of the input power is applied to said source input whenever the current flow to said electrode has at least said predetermined value so that the unidirectional high potential and the current flow are decreased.

4,266,263

FORCE MEASURING CAPACITOR

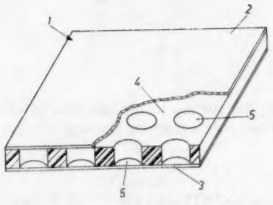
Rainer Haberl, Traiskirchen, and Josef Kastner, Vienna, both of Austria, assignors to Semperit Aktiengesellschaft, Vienna, Austria

Filed Jan. 18, 1978, Ser. No. 870,476

Claims priority, application Switzerland, Jan. 21, 1977, 730/77

Int. Cl.³ H01G *7/00*

U.S. Cl. 361—283 **24 Claims**



1. A capacitor comprising:

a pair of separate electrodes, one of which electrodes defines a measuring electrode;

an elastic dielectric interposed between said pair of electrodes and having a plurality of air containing chambers, for separating said electrodes from one another;

said elastic dielectric being formed from a material selected from the group consisting of rubber, plastic and mixtures, thereof;

said electrodes serving for the measurment of forces acting upon said measuring electrode by detecting resultant capacitance changes; and

said plurality of air containing chambers having an air pressure that is less than normal atmospheric air pressure.

4,266,264

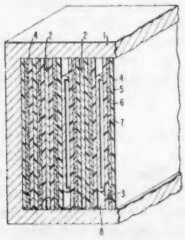
META ISOPROPYL BIPHENYL INSULATED ELECTRICAL APPARATUS

Lyon Mandelcorn, Pittsburgh; Thomas W. Dakin, Murrysville, both of Pa., and George E. Mercier, Bloomington, Ind., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 24, 1977, Ser. No. 809,589

Int. Cl.³ H01G *4/22;* **H01B** *3/22*

U.S. Cl. 361—318 **14 Claims**



1. A capacitor comprising layers of metal foil alternating with a dielectric spacer impregnated with a dielectric fluid which comprises isopropyl biphenyl of which at least 55% by weight is the meta isomer.

4,266,265

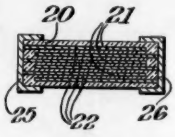
CERAMIC CAPACITOR AND METHOD FOR MAKING THE SAME

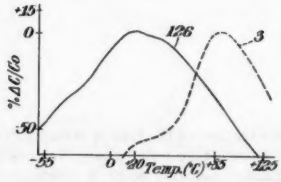
Galeb H. Maher, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Sep. 28, 1979, Ser. No. 79,686

Int. Cl.³ H01G *4/12;* **C04B** *35/46, 35/64*

U.S. Cl. 361—321 **14 Claims**





1. A method for making a ceramic capacitor comprising:

mixing ceramic precursor powders consisting essentially of a high-temperature-firing ceramic that includes an alkaline-earth-metal titanate and a cadmium silicate powder selected from $CdO.SiO_2$, $2CdO.SiO_2$, $5CdO.2SiO_2$, $3CdO.SiO_2$ and combinations thereof, the overall atomic ratio of Cd to Si in said cadmium silicate powder being from 2:1 to 3:1,

forming a body of said mixed powders;

firing said body at a temperature of up to 1150° C. and at less than the melting temperature of said cadmium silicate powder; and

applying two spaced electrodes in contact with said body.

11. A ceramic capacitor comprising a dielectric ceramic body and two spaced electrodes in contact with said body, said body consisting essentially of a granular crystalline phase and an intergranular silicate phase, said granular phase consisting essentially of from 92 to 84 mole percent $BaTiO_3$ and from 8 to 15 mole percent $PbZrO_3$ wherein from 0.4 to 3 mole percent of said Ba and Pb are replaced by cadmium cations, the atomic ratio of the total number of Cd atoms to the total number of Si atoms in said body being from 2:1 to 3:1.

4,266,266

ELECTRICAL FIXTURE INTENDED PRIMARILY FOR OUTDOOR USE AND DESIGNED TO PROTECT AN ELECTRICAL DEVICE HOUSED THEREIN FROM THE ELEMENTS

George E. Sanner, Cypress Hill, Sparks, Md. 21152

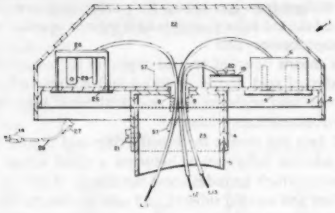
Filed Dec. 21, 1978, Ser. No. 971,738

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—357 **11 Claims**

1. The combination of an electrical fixture intended primarily for outdoor use and a hollow stanchion, said fixture comprising: a horizontally orientable base having a floor and a depending flange extending continuously around the periphery of said floor; a casing having a domed upper portion and a

depending skirt extending continuously around the periphery of said upper portion, said casing being telescopically assembled to said base with said skirt tightly juxtaposed to said base flange continuously around the periphery thereof and extending downwardly beyond said base flange to thereby protect the cavity consequentially formed between said base and said casing from the elements; a downwardly opening, hollow,



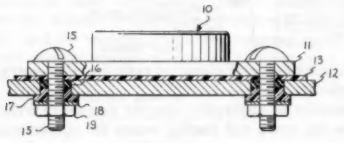
cylindrical mount on the lower side of said base floor supporting the base and casing assembly from, the upper end of said stanchion with the floor of said base above the stanchion said mount telescopically surrounding the upper end of the stanchion; an electrical device housed in the cavity between said base and casing and thereby protected from the elements as aforesaid; and means in said base floor providing electrical line access to said cavity and the electrical device housed therein.

4,266,267

MOUNTING ARRANGEMENT FOR TRANSISTORS AND THE LIKE

Eugen H. Ruegg, Forest, Va., assignor to General Electric Company, Lynchburg, Va.

Filed Nov. 19, 1979, Ser. No. 95,454
Int. Cl.³ H05K 7/20
U.S. Cl. 361—386 **6 Claims**



1. An improved arrangement mounting a transistor having a mounting plate on a metallic heat sink having an opening therein, comprising:

a. an O ring of resilient insulating material positioned in said opening in said heat sink;

b. a sheet of insulating material positioned on a first surface of said heat sink and against said O ring;

c. said mounting plate of said transistor being positioned on said sheet of insulating material so that said sheet of insulating material is between said mounting plate and said metallic heat sink;

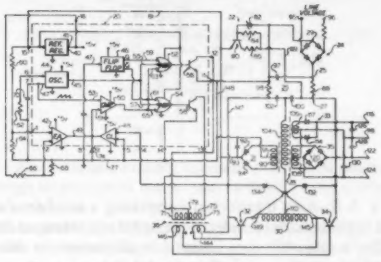
d. and means passing through said mounting plate, said sheet of insulating material, said O ring, and said heat sink for compressing said O ring.

4,266,268

SWITCHING POWER SUPPLY HAVING ENERGY STORAGE INDUCTOR IN PRIMARY CIRCUIT OF OUTPUT TRANSFORMER

Nikola Tkacenko, 1378 Sage Hen Way, Sunnyvale, Calif. 94087

Filed Apr. 23, 1979, Ser. No. 32,504
Int. Cl.³ H02M 7/537
U.S. Cl. 363—49 **11 Claims**



1. A switching power supply apparatus comprising:

means forming first and second terminals;

means providing a source of DC voltage across said first and second terminals;

output transformer means having a primary winding and a plurality of secondary output windings magnetically coupled to said primary winding;

inductor means including a first inductor having a first winding portion, a second winding portion inductively coupled to said first winding portion and a center tap connected to one end of said primary winding;

first impedance means coupling the other end of said primary winding to said first terminal;

second impedance means coupling said other end of said primary winding to said second terminal;

control means for monitoring the magnitude of said DC voltage and for generating first and second switching control signals including first and second control pulses respectively, the duty cycle of which is directly related to the magnitude of said DC voltage;

first switching means including a first transistor responsive to said first control signal and operative to complete a current flow path for the duration of said first control pulse from said first terminal through said first portion of said inductor means, said center tap, said primary winding, and said second impedance means to said second terminal;

second switching means including a second transistor responsive to said second control signal and operative to complete a current flow path for the duration of said second control pulse from said first terminal through said first impedance means, said primary winding, said center tap and said second inductive portion of said inductor means to said second terminal; and

diode means for creating a uni-directional current path from said second terminal through at least a portion of said first inductor to said first terminal so that when neither said first nor said second switching means is conductive, energy stored in said inductor means is returned to said source of DC voltage.

4,266,269
FLY-BACK TRANSFORMER

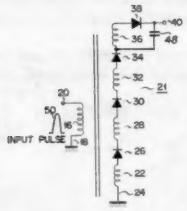
Akira Toba, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 15, 1979, Ser. No. 21,548

Claims priority, application Japan, Mar. 23, 1978, 53-32321; Mar. 23, 1978, 53-32322

Int. Cl.³ H02M 7/10

U.S. Cl. 363—68 **10 Claims**



1. A fly-back transformer comprising a number of cylindrical bobbins made of dielectric material and arranged concentrically, a magnetic core inserted in the innermost one of said bobbins, a primary winding wound in layer on the outer periphery of said innermost bobbin, a pair of input terminals connected to said primary winding, a number of secondary windings wound in layer in the same winding direction on the corresponding bobbins to be arranged between the remaining bobbins, a pair of output terminals connected respectively to the innermost and outermost ones of said secondary windings, a number of diodes each having a cathode and an anode and arranged over said outermost bobbin, one of said diodes being connected between said outermost secondary winding and one of said output terminals, the other of said diodes each of which is connected between each of said adjacent secondary windings in the forward direction thereby connecting said number of secondary windings in series between said pair of output terminals, and a capacitor formed between the cathode of said one diode connected to one end of said outermost secondary winding and the cathode of one of said other diodes whose anode is connected to the other end of said outermost secondary winding.

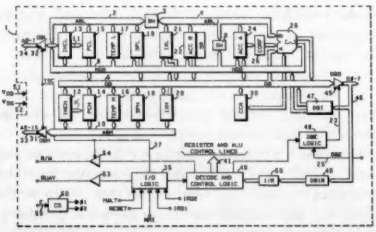
4,266,270
MICROPROCESSOR HAVING PLURAL INTERNAL DATA BUSES

R. Gary Daniels, Round Rock; Fuad H. Musa; William B. Wilder, Jr., both of Austin; Michael F. Wiles, Round Rock, all of Tex., and Thomas H. Bennett, Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 5, 1978, Ser. No. 939,741

Int. Cl.³ G06F 1/00

U.S. Cl. 364—200 **3 Claims**



1. In an integrated circuit microprocessor comprising:

a plurality of registers for storing digital information affecting the operation of said microprocessor,

first data bus means for transferring digital operand information between a first subset of said registers which includes less than all of the registers,

address bus means for transferring digital address information between a second subset of said registers which includes some but not all of the registers in the first subset,

an arithmetic logic unit coupled to said first data bus means and said address bus means for performing computations on said digital information in at least one operation of said microprocessor, and

control means coupled to said registers for controlling the transfer of said digital operand and address information between said registers and said arithmetic logic unit, the improvement comprising:

second data bus means for transferring said digital operand and address information between a third subset of said registers which includes some but not all of the registers in the first and second subsets, and said arithmetic logic unit, under control of said control means, whereby the control means may selectively control the simultaneous transfer of said digital information via the first data, second data and address bus means, in at least one operation of said microprocessor.

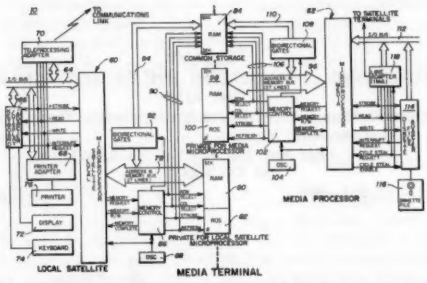
4,266,271
RECONFIGURABLE CLUSTER OF DATA-ENTRY TERMINALS

Martin E. Chamoff, 2115 NE. 10 Ave., Rochester, Minn. 55901; Irving L. Miller, R.R. #1, Pine Island, Minn. 55963, and Donald L. Thorson, 2624 NW. 17 Ave., Rochester, Minn. 55901

Filed Oct. 10, 1978, Ser. No. 950,091

Int. Cl.³ G06F 3/04

U.S. Cl. 364—200 **21 Claims**



1. A reconfigurable clustered system of data-entry terminals comprising:

a plurality of physically separate data-entry terminals each having entry and display means for communicating data between an operator and said terminal and each further including processing means for operating upon data input to said terminal,

a communications link coupled between said terminals to form a data-entry cluster,

one of said terminals being designated as a primary terminal and including means for controlling the flow of data via said communications link and means for providing central storage for data input to all said terminals in said data-entry cluster,

processing programs being stored in said primary terminal and including means for selectively transferring the processing programs to ones of said terminals for implementation, and

means responsive to operation of said entry means of one of said terminals to convert that terminal to said primary

terminal while maintaining the physical configuration of said data-entry cluster.

4,266,272

TRANSIENT MICROCODE BLOCK CHECK WORD GENERATION CONTROL CIRCUITRY

Neil C. Berglund, Kasson, and William G. Kempke, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 12, 1978, Ser. No. 950,898

Int. Cl.³ G06F *11/26*

U.S. Cl. 364—200 **8 Claims**

1. In a computer system having a main storage for storing data, instructions and control words, a central processing unit (CPU) including a writable control storage. a arithmetic and logic unit (ALU) operable in response to an exclusive OR function control signal to perform an exclusive OR operation, and an addressable register initialized with a predetermined operand, said ALU connected to receive an operand from said addressable register and control words read from said main storage to be written into control storage, the improvement comprising:

reading means in said CPU connected to said main storage for reading control words from said main storage,

writing means in said CPU connected to said reading means and to said control storage and operable in response to said reading means reading control words from main storage for writing said control words read from said main storage into control storage, and

means in said CPU connected to said writing means operable in response to said writing means writing control words into control storage for generating exclusive OR function control signals and transfer control signals to control said ALU in said CPU to perform an exclusive OR operation with the operand from said addressable register with the control word being written into control storage, and to control the transfer of said operand from said addressable register and the transfer of said control word being written into control storage to said ALU whereby a block check word is simultaneously generated as a control word is written into control storage.

4,266,273

SYSTEM FOR CONTROLLING TRACK-BOUND VEHICLES FORMING A TRAIN

Karl-Ulrich Dobler, Waiblingen; Sigurd Mura, Leonberg, and Erhard Kraft, Hemmingen, all of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 21, 1979, Ser. No. 40,611

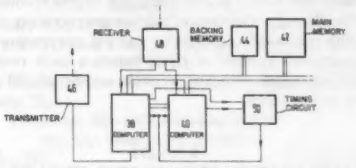
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1978, 2824168

Int. Cl.³ B61L *27/00;* **G06F** *15/50*

U.S. Cl. 364—426 **12 Claims**

1. A system for controlling track-bound vehicles comprising:

a train of N track-bound vehicles including at least two guide vehicles each having an on-board computer system and switching device, transmitting and receiving equipment connected to said on-board computer system, position-determining equipment connected to said on-board computer system, propulsion and braking equipment connected to said switching device, where N is an integer greater than two, and N-2 vehicles of said train each having a propulsion and braking equipment connected to said switching device of an activated one of said on-board computer system, said on-board computer system of each of said two guide vehicles delivering control commands to



said propulsion and braking equipment of said N vehicles through its associated one of said switching device when activated; and

a fixed control station having a control computer system capable of exchanging data messages with said on-board computer system of each of said two guide vehicles, said control computer system activating one of said two on-board computer systems to connect said control commands thereof through its associated one of said switching devices.

4,266,274

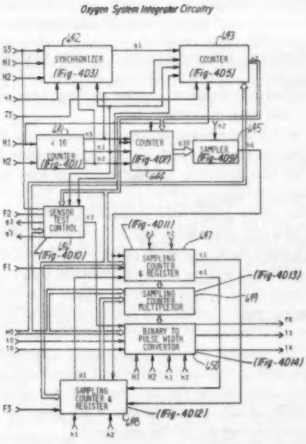
MICROPROCESSOR-BASED ENGINE CONTROL SYSTEMS

Alan W. Barman, Oak Park, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 27, 1978, Ser. No. 881,925

Int. Cl.³ F02B *75/10;* **F02D** *78/00;* **H03K** *13/20*

U.S. Cl. 364—431 **22 Claims**



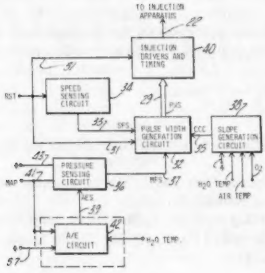
16. In an internal combustion engine having an intake system, an exhaust system, an engine block, a plurality of cylinders disposed in said engine block, a piston mounted for reciprocal movement within each of said plurality of cylinders, an output shaft rotatively driven by the reciprocal movement of said pistons within said cylinders, oxygen sensor means operatively coupled to said exhaust system for generating a signal indicative of the relative air/fuel ratio existing therein and

means responsive to the measured air/fuel ratio in said exhaust system for controllably varying engine operating conditions to change said air/fuel ratio, the improvement comprising sensor means operatively associated with said engine for outputting an engine position pulse each time one of said plurality of pistons approaches a predetermined reference position within its corresponding cylinder, and means for sampling said oxygen sensing means at a rate that bears a constant relationship to the speed of said engine, the temperature of said oxygen sensing means being tested to determine the validity of said sampled measured values at least once each engine revolution, said sampling being a function of said engine position pulses for sampling the value measured by said oxygen sensing means a predetermined number of times between each two of said plurality of cylinders regardless of the number of said cylinders in said engine block.

4,266,275
ACCELERATION ENRICHMENT FEATURE FOR ELECTRONIC FUEL INJECTION SYSTEM

Roman O. Marchak, Northville, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 28, 1979, Ser. No. 24,628
Int. Cl.[3] F02B *3/00;* **F02M** *7/06*
U.S. Cl. 364—431 **13 Claims**



1. An electronic fuel management system having an acceleration enrichment feature producing an enriched air/fuel ratio to an internal combustion engine during operator induced transients, said system comprising:

a pulse width generation means for calculating the duration of pulses of a pulse width signal, said duration being indicative of the quantity of fuel metered into said internal combustion engine;

said pulse width generation means initiating each individual pulse at a rate dependent upon the RPM of the engine and timing the duration of each pulse with a controllable ramp voltage begun concurrently therewith, said ramp voltage beginning from a voltage level which is a function of an engine operating parameter and terminating at its intersection with a threshold voltage to end the pulse width;

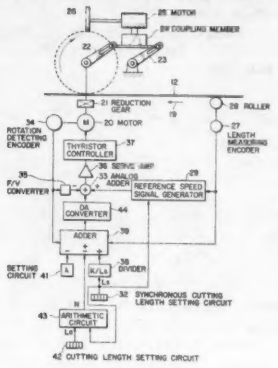
a pressure sensing circuit, electrically connected to said pulse width generation means and responsive to the absolute pressure of the intake manifold, for generating said threshold voltage as a function of the absolute pressure of the intake manifold of the engine;

acceleration enrichment means for generating an acceleration enrichment signal that increases said threshold voltage to said pulse width generation means during operator induced transients, said acceleration enrichment means including a voltage controlled current sink means electrically connected to said pressure sensing circuit for varying said threshold voltage, said current sink means being regulated by a control voltage which is a function of said operator induced transient.

4,266,276
CUTTING CONTROL APPARATUS

Shigeki Hayashi, Tokyo, and Takemitsu Okamoto, Atsugi, both of Japan, assignors to Nusco Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1979, Ser. No. 81,958
Claims priority, application Japan, Oct. 4, 1978, 53/122973
Int. Cl.[3] G06F *15/46;* **B26D** *5/20*
U.S. Cl. 364—475 **10 Claims**



7. A cutting control apparatus for cutting, by a rotary type flying cutter, a sheet, pipe or like material fed by a feeder, comprising:

a reference speed signal generator for multiplying a speed signal of a motor for driving the blade of the rotary type flying cutter, by a synchronous cutting length corresponding to setting of a blade speed change mechanism of the rotary type flying cutter;

a motor supplied with the multiplied output as a reference speed signal to feed the material;

a length-measuring encoder for generating length-measuring pulses corresponding in number to the rotation of the motor for feeding the material;

a rotation detecting encoder for generating rotation pulses corresponding in number to the rotation of a motor for driving the blade of the cutter;

an adder supplied with a subtractive input that the length-measuring pulse is mutiplied by a constant coefficient and an additive input that the rotation pulse is multiplied by a coefficient proportional to the synchronous cutting length;

an arithmetic circuit for performing an operation of a correction value on the basis of a set cutting length and the synchronous cutting length and applying the correction value to the adder for each cutting; and

a D-A converter for converting the output from the adder into an analog signal and using it as a correction signal for the reference speed signal.

4,266,277
CHROMATOGRAPHIC ANALYSIS OF GASEOUS MATTER

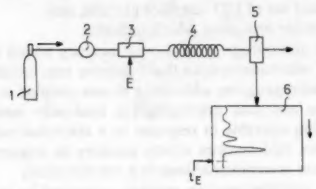
Olivier Issenmann, Lamorlaye, France, assignor to Compagnie Geofinanciere, Paris, France

Filed Apr. 24, 1979, Ser. No. 32,884
Claims priority, application France, Apr. 25, 1978, 78 12138
Int. Cl.[3] G06F *15/34*
U.S. Cl. 364—498 **17 Claims**

5. Apparatus for processing the detector signal of a chromatographic analysis apparatus comprising, in combination:

a timing and programming device for initiating and terminating time periods each of which occurs whilst the detector is transmitting a signal indicative of the concentration of a constituent to be measured;

a device for digitalizing the detected signal transmitted during each time period and for storing the maximum value thereof which is respectively indicative of the concentration of each constituent to be measured;



an analogue memory corresponding to each constituent to be measured;

a device for calibrating and linearizing the signal stored in said memory, and means for outputting said signal.

4,266,278

PORTABLE ELECTRONIC DEVICE EQUIPPED WITH CALCULATION AND TIMEKEEPING FUNCTIONS

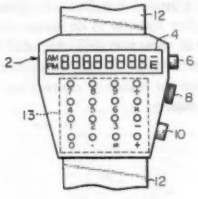
Heihachiro Ebihara; Fukuo Sekiya, both of Tokorozawa, and Takashi Yamada, Sayama, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 890,312, Mar. 27, 1978, abandoned. This application Jul. 9, 1979, Ser. No. 56,086

Claims priority, application Japan, Mar. 30, 1977, 52-39125; Apr. 8, 1977, 52-40818

Int. Cl.[3] **G06F** *3/02, 15/02;* **G04B** *47/00*

U.S. Cl. 364—705 **6 Claims**



1. In an input circuit for a portable electronic device powered by a battery having first and second potentials, which input circuit has a keyboard having ten keys and function keys to provide numeric signals and function signals, respectively, the improvement comprising:

a frequency standard providing a standard frequency signal;

a key contact matrix comprising a pluraltiy of key contacts and responsive to actuation of said ten keys and said functions keys;

a plurality of matrix columns of said matrix key contact comprising electrical conductors connected to columns of said key contacts;

a plurality of matrix rows of said key contact matrix comprising electrical conductors connected to rows of said key contacts;

a plurality of impedance elements connected between said plurality of matrix columns and the first potential of said battery;

a plurality of electronic switching elements connected between said matrix rows and the second potential of said battery and having control electrodes, respectively;

timing signal generating means responsive to said standard frequency signal for providing a plurality of timing signals;

control signal generation circuit means for generating a control signal when said portable electronic device is set in its predetermined operating mode, said control signal having a duty cycle lower than one half; and

a control circuit responsive to said control signal and said plurality of timing signals to generate a plurality of scanning signals which are applied to the control electrodes of said plurality of electronic switching elements, respectively, for thereby sequentially causing each of said plurality of electronic switching elements to enter an electrically conductive state for a limited period of time.

4,266,279

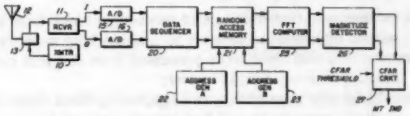
MEMORY SYSTEM FOR A DOPPLER RADAR INCORPORATING A FAST FOURIER TRANSFORM COMPUTER

Kenneth W. Hines, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 29, 1979, Ser. No. 25,313

Int. Cl.[3] **G06F** *9/36, 15/332*

U.S. Cl. 364—726 **8 Claims**



1. A fast Fourier transform computer with a predetermined radix utilized in conjunction with a Doppler radar and incorporating a data record memory system for receiving and storing a batch of data, a batch of data including a predetermined number of radar samples and a substantially larger predetermined number of range bins per sample, and reading out the stored batch of data in numercial range bin order, said memory system comprising:

(a) a random access memory being sufficiently large to store a batch of data and connected to write data for storage and substantially simultaneously read output data at each selected address of said memory;

(b) data sequencing circuitry for receiving data from the radar and supplying the data to the random access memory in a predetermined sequence; and

(c) address selection means connected to said random access memory for selecting the addresses therein in a sequence that operates in conjunction with the predetermined sequence of received data to read data out in numerical range bin order.

4,266,280

METHOD FOR STORING SERIAL DATA ON A RECORDING CARRIER

Joachim Heinzl, Munich; Hubert Schlossbauer, Krailling; Heide-Marie Miller, and Irene Uhden, both of Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 27, 1979, Ser. No. 24,437

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1978, 2814569

Int. Cl.[3] **G06F** *3/06;* **G11B** *5/008*

U.S. Cl. 364—900 **7 Claims**

1. A method for processing characters serially stored on a recording carrier in the form of blocks of equal length, said characters consisting of binary-coded information characters and filler characters, comprising the steps of:

transmitting a block to be processed from said recording carrier to a working memory;

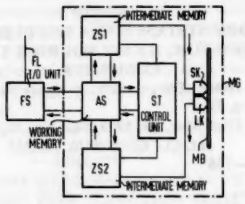
transmitting a block immediately preceding said block to be processed into a first intermediate memory connected to said working memory;

transmitting a block succeeding said block to be processed into a second intermediate memory connected to said working memory;

processing said block to be processed by changing the characters thereof my means of a user-operated input/output unit for inserting and removing characters connected to said working memory;

transmitting said block to be processed into said first intermediate memory if a pre-determined number of characters is stored in said working memory;

simultaneously transmitting said immediately preceding block from said first intermediate memory to said carrier;



simultaneously transmitting said succeeding block from said second intermediate memory to said working memory;

transmitting said block to be processed from said first intermediate memory to said carrier;

simultaneously transmitting said succeeding block from said working memory to said first intermediate memory; and

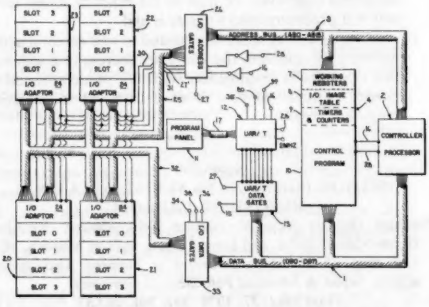
transmitting said succeeding block from said first intermediate memory to said carrier.

4,266,281

MICROPROGRAMMED PROGRAMMABLE CONTROLLER

Odo J. Struger, Chagrin Falls, and Ernst H. Dummermuth, Chesterland, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Apr. 2, 1979, Ser. No. 26,012
Int. Cl.[3] G06F *9/22, 13/00*; G05B *11/01*
U.S. Cl. 364—900 **14 Claims**



1. A programmable controller which comprises:

a random access memory which contains a control program comprised of a set of macroinstructions each stored on a separately addressable line of the memory;

an address bus coupled to said random access memory to select a line in said random access memory when an address signal is generated thereon;

a data bus coupled to said random access memory to receive data read from an addressed line of the random access memory and to write data into an addressed line of said random access memory;

a plurality of separately addressable sets of I/O interface circuits, each set being connected to a sensing device or operating device on a controlled machine;

I/O address gates having inputs connected to said address bus and outputs coupled to each of said separately addressable sets of I/O interface circuits;

I/O data gates connected to said data bus and coupled to each of said separately addressable sets of I/O circuits to read data from an addressed set or write data to an addressed set of I/O interface circuits; and

a controller processor which includes:

(a) a microprogram read-only memory which stores sets of microinstructions that comprise microroutines;

(b) microprogram addressing means coupled to said data bus and said microprogram read-only memory and being operable in response to a macroinstruction read from said random access memory to sequentially address macroinstructions in a microroutine;

(c) a microinstruction register connected to receive the addressed microinstructions read from said microprogram read-only memory and generate the same on a microcode bus;

(d) a central processor unit coupled to said data bus, coupled to said address bus and coupled to said microcode bus, said central processor unit being operable in response to microcodes on said microcode bus to perform arithmetic and logic operations on data received by it through said data bus, being operable in response to other microcodes on said microcode bus to generate address signals on said address bus, and being operable in response to other microcodes on said microcode bus to generate data on said data bus; and

(e) a decimal adjust accumulator having inputs coupled to the central processor unit to receive binary numbers which result from arithmetic operations performed by said central processor unit, and having a set of outputs coupled to said central processor unit, said decimal adjust accumulator being operable to generate at its set of outputs a binary number which when added to the binary number applied to its inputs converts said binary number to a binary coded decimal number, whereby results of arithmetic functions performed using binary numbers can be quickly converted to binary coded decimal numbers.

4,266,282

VERTICAL SEMICONDUCTOR INTEGRATED CIRCUIT CHIP PACKAGING

Robert A. Henle, Clinton Corners, and Alfred H. Johnson, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,392
Int. Cl.[3] G11C *5/04, 5/06*
U.S. Cl. 365—52 **10 Claims**

1. A vertical semiconductor memory integrated circuit chip package comprising:

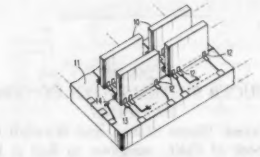
a substrate having conductive lines thereon or therein;

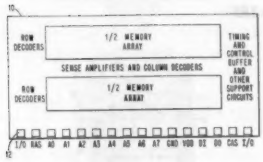
a plurality of integrated circuit memory chips each of which having its signal and power terminals located on one edge of the chip;

said plurality of memory chips are physically and electrically connected at their said one edge to said conductive lines thereon or therein said substrate; and

said plurality of memory chips form a random access memory organization by connection of appropriate numbers of said memory chips to one another and to external module

contacts through said conductive lines to provide bit address, data in (read), data out (write), column address




1/2 MEMORY ARRAY
ROW DECODERS
SENSE AMPLIFIERS AND COLUMN DECODERS
TIMING AND CONTROL BUFFER AND OTHER SUPPORT CIRCUITS
I/O RAS A0 A1 A2 A3 A4 A5 A6 A7 GND VBB D1 D0 CAS I/O

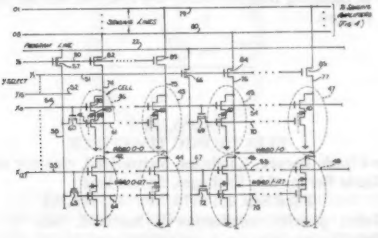
select, row address select, ground and supply voltage for said random access memory organization.

4,266,283

ELECTRICALLY ALTERABLE READ-MOSTLY MEMORY

George Perlegos, Cupertino, and William S. Johnson, Palo Alto, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 16, 1979, Ser. No. 12,670
Int. Cl.[3] B11C *11/40*
U.S. Cl. 365—104 **21 Claims**



1. In a read-mostly memory having a plurality of electrically alterable memory cells, one of said cells being disposed at each intersection of transverse X- and Y-lines in said memory, an improvement permitting the alteration on n-bit words stored in said memory comprising:

a plurality of first lines generally parallel to said Y-lines, one of said first lines being disposed between every nth and nth+1Y-line;

a plurality of second lines generally parallel to said X-lines and disposed between each of said X-lines, said second lines extending generally between said first lines and being coupled to said cells;

selection means for coupling selected ones of said first and second lines such that a single word stored in said memory is electrically alterable;

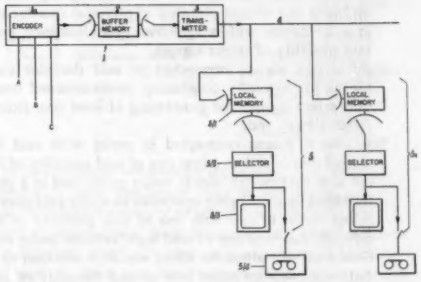
whereby a single word stored in said memory may be electrically altered without disturbing the remainder of the words stored in said memory.

4,266,284

SYSTEMS FOR THE HANDLING AND DISTRIBUTING OF DATA

Franco Carosi, and Tito Reggiani, both of Rome, Italy, assignors to Voxson S.p.A., Italy

Filed Apr. 30, 1979, Ser. No. 34,538
Int. Cl.[3] G11C *13/00*
U.S. Cl. 365—189 **1 Claim**



1. A system for handling and distributing of data comprising:

(a) a signal line,

(b) an ordering center including:

(1) an encoder adapted for receipt of data signals and encoding thereof;

(2) a memory unit for storing encoded data signals in a format in which the data signals are divided into a plurality of memory pages, each page having a page identifying code and each page divided into a plurality of character lines, each character line having a line identifying code; and

(3) a transmitter coupling said memory unit to said signal line and adapted for continuous and repeated transmission on said signal line of recorded data signals from said memory unit; and

(c) a plurality of peripheral user apparatuses, each user apparatus coupled to said signal line and including:

(1) a display unit for visually displaying information applied thereto;

(2) a local memory adapted for storing encoded data signals received on said signal line from said ordering center, including the page identifying codes and line identifying codes; and

(3) a selector adapted for selecting page identifying codes and line identifying codes of encoded data signals stored within said ordering center memory unit for application of the correspondingly stored encoded data signals to said display unit for visual display thereon.

4,266,285

ROW SELECTION CIRCUITS FOR MEMORY CIRCUITS

William Panepinto, Jr., Tewksbury, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jun. 28, 1979, Ser. No. 52,999
Int. Cl.[3] G11C *13/00*
U.S. Cl. 365—189 **21 Claims**

1. A memory subsystem comprising a memory board, said board including a control section and a memory section having at least one segment including a plurality of physical row locations of memory chips for providing a predetermined increment of addressable memory space, said memory section including:

a number of addressable memory chips having one of two different memory capacities, each of said number of addressable memory chips having a first of said memory capacities being positioned at each of said plurality of physical row locations; and,

said control section including:

decoder circuit means connected to receive a portion of a plurality of row address signals and for generating a plurality of select signals in response to said row address signals;

a plurality of logic circuits corresponding in number to said plurality of physical row locations, each of said logic circuits being connected to said decoder circuit means for enabling the addressing of said addressable memory chips haivng said first memory capacity at a different one of said plurality of physical row locations in accordance with a different predetermined one of said plurality of select signals;

logic circuit means connected to said decoder circuit means for logically combining predetermined ones of said select signals for generating at least one alternate select signal; and,

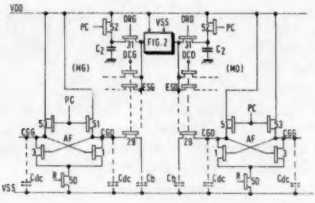
first switch means connected in series with said logic circuit means and to a first one of said plurality of logic circuits, said switch means when positioned in a predetermined manner being operative to apply said alternate select signal to said first one of said plurality of logic circuits, said first one of said logic circuits being conditioned by said alternate select signal in addition to said different predetermined one of said plurality of select signals for enabling the addressing of memory chips having a second of said memory capacities being positioned only at a first one of said plurality of said physical row locations, said memory chips having said second capacity providing at least the same predetermined increment of addressable memory space provided by the replaced plurality of rows of said memory chips having said first capacity.

4,266,286

ARRANGEMENT FOR EXTRACTION AND RECEIVING DATA FOR A REFRESHABLE MEMORY

André Richard, Paris, France, assignor to Compagnie Internationale Pour l'Informatique CII-Honeywell Bull, Paris, France

Filed Nov. 8, 1979, Ser. No. 92,562
Claims priority, application France, Nov. 22, 1978, 78 32933
Int. Cl.³ G11C *7/06, 7/00*
U.S. Cl. 365—205 **11 Claims**



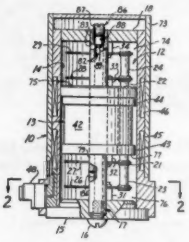
1. In a circuit arrangement for extracting and rewriting data for a refreshable memory divided into two half-memories each containing the same number of columns, each column being divided by a refreshing amplifier into two half-columns whose potentials become unequal whenever there is a refreshing operation, the memory having a pair of read/rewrite buses, each bus being connectable by an addressable switch to one of the half-columns of any column in one of the half-memories, the arrangement being connected between these buses by read input and rewrite outputs, the improvement comprising means for initializing said buses to the lower of the said unequal potentials, means for raising one of said buses to a reference potential when the other bus is connected to a half-column, means for setting up a read signal when the reference read/rewrite phase potential rises, and means for applying the read signal to the rewrite output which is connected to the bus connected to the half-column, said means for applying the read signal being adapted to prevent any transient variation in potential at the rewrite outputs which might erase the data in store.

4,266,287

TRANSDUCER SYSTEMS WITH CONTROLLED DAMPING

Ebbert L. Elswood, Sierra Madre, and Wyndall O. Reynolds, Monrovia, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Apr. 16, 1979, Ser. No. 30,204
Int. Cl.³ H04R *11/00*
U.S. Cl. 367—185 **25 Claims**



1. In a transducer having a mass oscillating in the manner of a piston in a cylinder having a first chamber region containing damping fluid on a first side of said mass and a second chamber region containing damping fluid on an opposite second side of said mass, the improvement comprising:

a conduit through said mass interconnecting said first and second chamber regions for the flow of damping fluid upon oscillation of said mass; and

valve means connected to said conduit for adjusting the flow of damping fluid between said first and second chamber regions.

4,266,288

ELECTRONIC TIMEPIECE

Jean-Claude Berney, Epalinges, Switzerland, assignor to Jean-Claude Berney SA, Epalinges, Switzerland

Filed Sep. 25, 1978, Ser. No. 945,384
Claims priority, application Switzerland, Sep. 27, 1977, 011765/77
Int. Cl.³ G04B *19/24*; G04C *17/00*; G04B *19/00, 27/00*
U.S. Cl. 368—28 **7 Claims**

1. An electronic time piece comprising:

means for producing time base pulses;

means responsive to said time base pulses for producing a plurality of time signals;

a minute hand;

means coupled to said minute hand for producing a signal representative of the position of said minute hand;

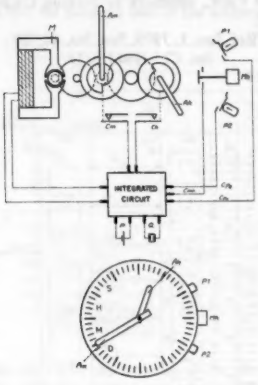
means responsive to a first manual action for producing a first manual command;

means responsive to said first manual command for selecting one of said time signals;

means responsive to said selected one of said time signals and to said minute hand position signal for producing a first comparison signal whenever said one selected time signal is unequal to said minute hand position signal;

means responsive to said first comparison signal for producing driving pulses;

means responsive to said driving pulses for driving said minute hand, thereby causing said minute hand to be



driven to a position corresponding to said one selected time signal in response to said first manual command.

4,266,289

CALENDAR CORRECTING MECHANISM

Hideyuki Nakao, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Nov. 27, 1978, Ser. No. 963,740
Claims priority, application Japan, Nov. 30, 1977, 52-144151
Int. Cl.[3] G04B *19/24*
U.S. Cl. 368—35 **2 Claims**

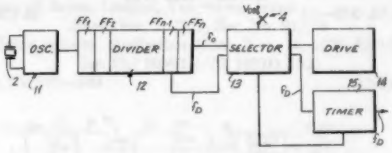
1. A calendar correcting mechanism of an electronic timepiece of the type having a battery power source, the calendar correcting mechanism comprising: a movable calendar member having dates thereon and movable for displaying different dates; switching means cooperative with said movable calendar member for switching between electrical signals to discriminate between 30-day months and 31-day months; a motor for driving said movable calendar member to display different dates; resettable calendar correcting circuit means responsive to the electrical signals switched by said switching means for operating said motor to correct the month-end date of 30-day months by rapidly advancing said movable calendar mechanism from the 30th day to the first day of the month so as not to display the 31st day of the month; a month display member; a correction lever operable for correcting the setting of said month display member; a reset switch for switching a resetting signal applied to reset said calendar correcting circuit means; a month setting switch for switching a month setting signal applied to set said calendar correcting circuit means to the month at which the timepiece starts to be used; and an externally operable member including means for simultaneously actuating said correction lever and said month setting switch.

4,266,290

ELECTRONIC WRISTWATCH CONTROL MECHANISM

Yoshinori Futami, and Tomio Ota, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jul. 19, 1978, Ser. No. 926,165
Claims priority, application Japan, Jul. 19, 1977, 52/86288
Int. Cl.[3] G04B *19/00*
U.S. Cl. 368—76 **7 Claims**



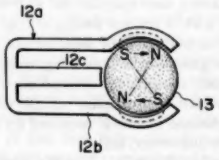
1. In an electronic wristwatch including oscillator means for producing a time frequency time standard signal, divider means including a plurality of series-connected divider stages adapted to receive said high frequency time standard signal and in response thereto produce a low frequency timekeeping signal and at least one intermediate frequency signal, said intermediate frequency signal being used to detect the timing rate of the wristwatch and a step motor means adapted to be driven in response to said low frequency timekeeping signal being applied thereto, the improvement comprising selector means coupled to said divider means, said selector means normally being adapted to be disposed in a first mode for receiving and transmitting said low frequency timekeeping signal to said step motor means, said selector means being further adapted to be disposed into a second mode for receiving and transmitting said intermediate frequency signal, and a manually operative member adapted to be displaced between a first non-engaged position wherein the step motor means is driven and a second engaged position wherein said step motor avoids being driven, said manually operative member being operably coupled to said selector means when said manually operative member is disposed in said second engaged position to thereby dispose said selector means into said second mode.

4,266,291

ELECTROMAGNETIC SWING DEVICE

Katsuhiro Obata, Iida, and Shigenobu Koizumi, Matsukawa, both of Japan, assignors to Iida Sankyo Co., Ltd., Iida, Japan

Filed Dec. 21, 1978, Ser. No. 972,175
Claims priority, application Japan, Dec. 27, 1977, 52-156573; Dec. 27, 1977, 52-156574
Int. Cl.[3] G04B *17/00*
U.S. Cl. 368—168 **15 Claims**



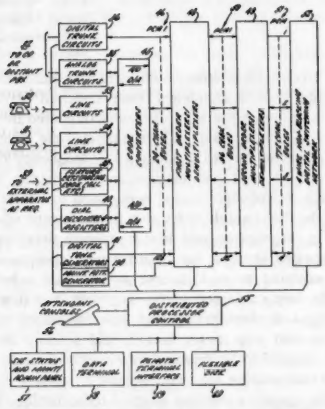
1. An electrical swing device comprising: drive means having a rotor and a stator, said drive means effectuating self-returning reciprocation within the rotation angle of said rotor, said self-returning reciprocation being effected by the reluctance torque of said rotor; intermittent drive transmission means for transmitting the rotation of said drive means to a utilization mechanism; a mechanical reset mechanism associated with said utilization mechanism; and means for exciting said stator with a pulse current.

4,266,292

METHOD AND APPARATUS FOR TESTING ANALOG-TO-DIGITAL AND DIGITAL-TO-ANALOG CODE CONVERTERS

John F. Regan, Lombard; Satyan G. Pitroda, Villa Park, both of Ill., and Byung C. Min, Belmont, Calif., assignors to Wescom Switching, Inc., Oak Brook, Ill.

Filed Nov. 20, 1978, Ser. No. 950,844
Int. Cl.[3] H04J 3/14
U.S. Cl. 370—13 34 Claims



1. In a digital time division, multiplex telecommunications switching system having code converters, each code converter having an A/D section and a D/A section, where the A/D section sequentially time samples analog data presented on A/D section analog inputs from discrete channel lines to provide analog data samples, converts the analog data samples to digital data samples on A/D section digital outputs and transmits the digital data samples in dedicated time division channels, grouped in frames, to a switching network for making time connections under control of a computer and where the D/A section receives digital data samples in dedicated time division channels, grouped in frames, from the switching network on D/A section digital inputs, converts the digital data samples to analog data samples and distributes the analog data samples, via a D/A section analog output, to discrete channel lines, a code converter fault detector comprising:

(a) pattern generator means for generating a test pattern of digital data samples for conducting a test on a code converter which is connected via the switching network to predetermined channels received by the D/A section of the code converter; and

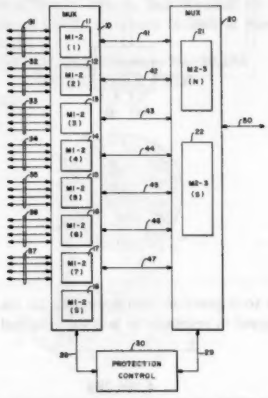
(b) pattern verification means for verifying that the D/A section has accurately converted the test pattern's digital data samples to analog data samples, including comparator means connected to the D/A section analog output for comparing all the analog data samples resulting from the test pattern to a single fixed predetermined value of a reference signal for each test and generating an error signal in response to a discrepancy between the analog data samples and the value of the reference signal so that the D/A section of the code converter can be monitored for fault conditions.

4,266,293

PROTECTION CONTROL UNIT FOR A TDM SYSTEM

Richard L. Anderson, Mountain View, and William E. Fleig, San Jose, both of Calif., assignors to Farinon Corporation, San Mateo, Calif.

Filed Jun. 1, 1979, Ser. No. 44,700
Int. Cl.[3] H04J 3/14
U.S. Cl. 370—14 8 Claims



1. A digital multiplexing system comprising first active multiplexer means connected to a plurality of multi-timeslot digital data buses for multiplexing first digital data on said plurality of buses onto a first multi-timeslot bus, first sampler means for sampling specified ones of said first digital data thereby forming a first serial bit stream, second sampler means for sampling specified ones of said multiplexed data corresponding to said first digital data, second standby multiplexer means connected to said plurality of buses and said first bus for demultiplexing specified ones of said sampled multiplexed data, said first sampler means responsive to said demultiplexed data, thereby forming a second serial bit stream corresponding to said first serial bit stream, protection control apparatus for comparing the corresponding bits of said first and second serial bit streams and for generating an alarm signal when a mismatch occurs between the comparison of said bit streams within a predetermined period of time, and means responsive to said alarm signal for inactivating said active multiplexer means and activating said standby multiplexer means.

4,266,294

COPY REPRODUCTION MACHINE WITH CONTROLLER SELF CHECK SYSTEM

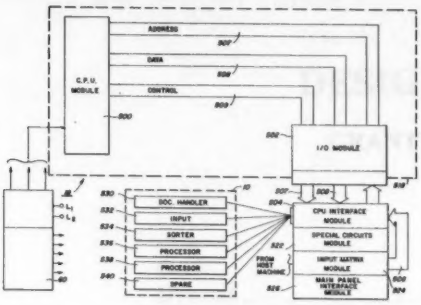
John W. Daughton; Stephen P. Wilczek, both of Fairport, and Edward L. Steiner, Macedon, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 829,031, Aug. 30, 1977, abandoned.
This application Apr. 9, 1979, Ser. No. 28,480
Int. Cl.[3] G06F 11/00; G01R 31/28
U.S. Cl. 371—24 7 Claims

1. In an electrophotographic machine with a plurality of processing elements and with a controller having a CPU and a plurality of control modules, the controller having address and data lines for identifying a particular processing element of the electrophotographic machine and providing data flow with the particular processing element identified, the address and data lines interconnecting the CPU, the control modules, and the processing elements, the method of verifying the integrity of one of said address and data lines associated with one of said plurality of control modules comprising the steps of:

looping a test bit through one of the address and data lines,

between the CPU and a first one of the plurality of control modules,
reading the bit returned,
comparing the returned bit with the test bit sent,
looping a test bit through one of the address and data lines



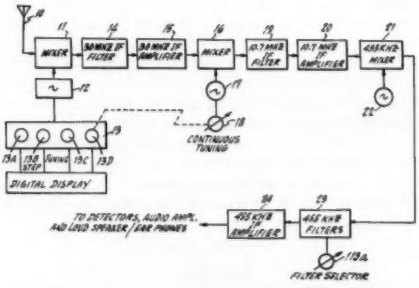
between the CPU, the first one of the plurality of control modules, and the second one of the plurality of control modules, reading the bit returned and comparing the bit returned with the test bit sent and
declaring a fault when the returned bit differs from the test bit.

4,266,295

CONTINUOUS TUNING CONTROL PARTICULARLY ADAPTED FOR USE IN VARIABLE FREQUENCY RECEIVERS AND GENERATORS

Henry M. Bach, Jr., P.O. Box 2174, Princeton, N.J. 08540

Filed Dec. 18, 1978, Ser. No. 970,269
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—158 **16 Claims**



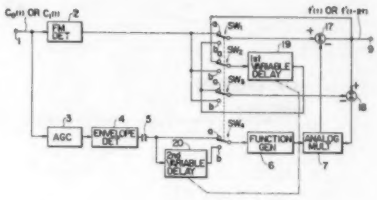
1. A variable frequency generator, comprising:
(a) a tuning control means including a controllable oscillator means coupled thereto for providing an output frequency which is continuous varied from a first to a second frequency by moving said control means from a first limit position to a second limit position according to a given control value specifying the magnitude of said output frequency within a given range,
(b) actuatable means coupled to said tuning control means and operative when actuated to abruptly alter said control value to enable continuous tuning of said oscillator means from either said first to said second frequency or from said second to said first frequency by moving said tuning control means between the same limits to therefore vary said magnitude of said output frequency always within said given range, whereby said output frequency may be continuously varied by said tuning control means either from the first to the second frequency or from said second to said first frequency consecutively without either the necessity of continuously varying said output frequency from said second frequency to said first frequency or from said first to said second frequency.

4,266,296

MULTIPATH DISTORTION COMPENSATION CIRCUIT AND METHOD

Yukinobu Ishigaki, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Nov. 7, 1979, Ser. No. 91,938
Claims priority, application Japan, Nov. 16, 1978, 53-140468
Int. Cl.³ H04B *1/10*; H03D *3/00*
U.S. Cl. 455—303 **13 Claims**



1. A multipath distortion compensation circuit comprising:
(a) a demodulator responsive to an angle modulated signal for producing a demodulated signal at its output terminal;
(b) an automatic gain control circuit responsive to said angle modulated signal for maintaining the average magnitude of said angle modulated signal constant;
(c) an envelope detector responsive to the output signal of said automatic gain control circuit;
(d) a capacitor for blocking direct current components contained in the output signal of said envelope detector;
(e) a function generator for giving a predetermined characteristic to its input signal;
(f) an analog multiplier having first and second input terminals and an output terminal, said first input terminal being responsive to the output signal of said function generator;
(g) first and second operational circuits, each of which has first and second input terminals and an output terminal, said second input terminal of said first operational circuit being responsive to the output signal of said analog multiplier, said first input terminal of said second operational circuit being responsive to the output signal of said first operational circuit, and said second input terminal of said analog multiplier being responsive to the output signal of said second operational circuit;
(h) first and second delay circuits, said second delay circuit being responsive to the output signal of said envelope detector through said capacitor; and
(i) switching means which assumes first and second positions respectively, said switching means, when assuming said first position, connecting the output terminal of said demodulator to said first input terminal of said first operational circuit, the output terminal of said first operational circuit to the input terminal of said first delay circuit, the output terminal of said first delay circuit to said second input terminal of said second operational circuit, the output terminal of said envelope detector via said capacitor to the input terminal of said function generator, and on the other hand when assuming said second position, said switching means connecting the output terminal of said demodulator to the input terminal of said first delay circuit and to said second input terminal of said second operational circuit, the output terminal of said first delay circuit to said first input terminal of said first operational circuit, and the output terminal of said second delay circuit to the input terminal of said function generator.

DESIGN PATENTS

GRANTED MAY 5, 1981

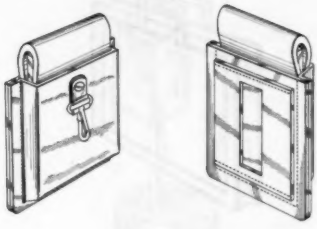
ERRATA

For CLASS	See PATENT NO.
D99–048	259,099

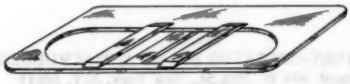
259,070
SLIP
Stuart N. Lazar, New York, N.Y., assignor to Kayser-Roth Corporation, New York, N.Y.
Filed Oct. 3, 1978, Ser. No. 948,270
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—22

259,071
NURSE'S HEADWEAR
Catherine C. Evans, Milwaukee, Wis., assignor to Will Ross, Inc., Milwaukee, Wis.
Filed Apr. 19, 1979, Ser. No. 31,697
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—240

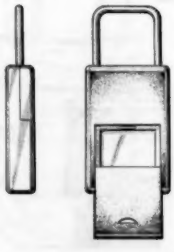
259,072
COMBINED HOLSTERED NOTEBOOK AND KEY RETAINER
Gerald W. Nice, P.O. Box 57, Annabella, Utah 84711
Filed Nov. 6, 1978, Ser. No. 958,129
Term of patent 14 years
Int. Cl. D02—*99*
U.S. Cl. D2—400



259,073
SPARE KEY HOLDER
Ronnie E. Holmes, P.O. Box 428, Suisun, Calif. 94585
Filed May 11, 1979, Ser. No. 38,084
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—61



259,074
KEY HOLDER
Robert I. Harris, Providence, R.I., assignor to Garstan Corporation, Providence, R.I.
Filed Nov. 21, 1978, Ser. No. 962,752
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—62



259,075

PORTFOLIO

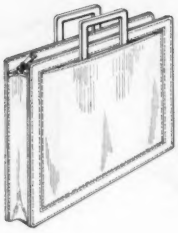
Daniel Solomon, Youngstown, Ohio, assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed Mar. 28, 1978, Ser. No. 891,154

Term of patent 14 years

Int. Cl. D3—*01*

U.S. Cl. D3—71



259,076

BATTERY-OPERATED BRUSH AND SCRUBBER

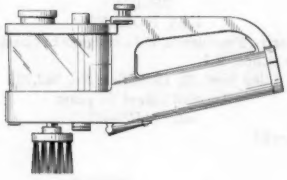
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

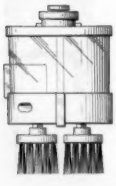
Filed Oct. 10, 1978, Ser. No. 949,531

Term of patent 14 years

Int. Cl. D4—*01;* D7—*05*

U.S. Cl. D4—14





259,077

RACK FOR HANGING BATHING SUITS AND THE LIKE

Katherine M. Lane, 7460 NW. 14th St., Plantation, Fla. 33313

Filed Jan. 25, 1979, Ser. No. 6,539

Term of patent 14 years

Int. Cl. D6—*04*

U.S. Cl. D6—28

259,078

LAWN CHAIR

Didier Deconinck, Seyssins, France, assignor to Allibert Exploitation Societe Anonyme, Grenoble, France

Filed Mar. 16, 1979, Ser. No. 21,120

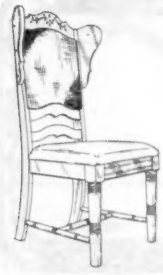
Claims priority, application France, Sep. 19, 1978, 78 2497

Term of patent 14 years

Int. Cl. D6—*01*

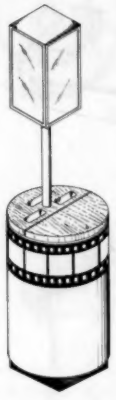
U.S. Cl. D6—73

259,079
DINING ROOM CHAIR
Melbourne F. Smith, Jr., Hickory, N.C., assignor to Broyhill Furniture Industries, Inc., Lenoir, N.C.
Filed Oct. 12, 1978, Ser. No. 950,704
The portion of the term of this patent subsequent to Jan. 20, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—74

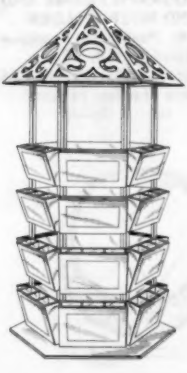


259,080
SHELF BRACKET OR THE LIKE
Rino Conti, Stoughton, Mass., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 11, 1978, Ser. No. 933,002
Term of patent 14 years
Int. Cl. D6—*04;* D8—*08*
U.S. Cl. D6—114

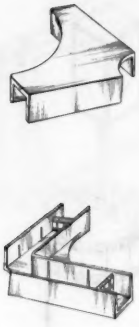
259,081
COMBINED FILM DEPOSITORY KIOSK AND SIGN HOLDER
Claude J. Sharpless, Jr., 7371 E. 82nd Pl., Commerce City, Colo. 80022, and Jules D. Devin, 309 Ridgebriar Dr., Richardson, Tex. 75080
Filed May 14, 1979, Ser. No. 38,492
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—148



259,082
DISPLAY STAND FOR ARTIFICIAL FLOWERS OR THE LIKE
Ronald J. Corelli, Chappaqua, N.Y., assignor to Corham Artificial Flower Co., White Plains, N.Y.
Filed Jan. 15, 1979, Ser. No. 3,392
Term of patent 14 years
Int. Cl. D20—*02;* D6—*06*
U.S. Cl. D6—149

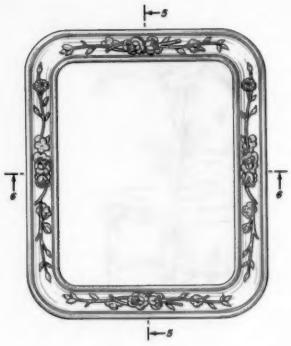


259,083
CORNER CONNECTOR FOR FURNITURE PANELS
Marlin G. Riegsecker, 1359 Ukiah Way, Upland, Calif. 91786
Filed Jul. 12, 1978, Ser. No. 923,819
Term of patent 14 years
Int. Cl. D06—*06;* D08—*08;* D09—*99*
U.S. Cl. D6—191

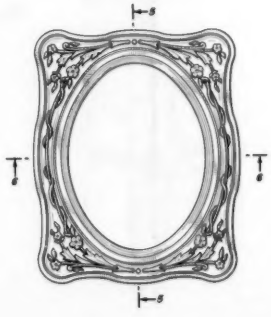


259,084
COMBINED PHOTOGRAPH FRAME AND IMPLEMENT AND NOTE HOLDER
Alwin J. Stahel, II, St. Paul, Minn., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Apr. 26, 1979, Ser. No. 33,620
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—233

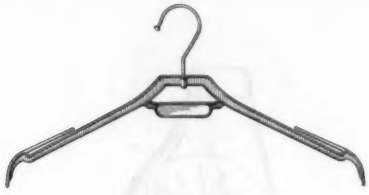
259,085
RECTANGULAR PICTURE FRAME
Pat Cochrane, 208 Tangelo, Irvine, Calif. 92715, and Antonio Montenegro, 2322 N. Larchmont, Santa Ana, Calif. 92706
Filed May 10, 1979, Ser. No. 37,902
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—242



259,086
PICTURE FRAME
Pat Cochrane, 208 Tangelo, Irvine, Calif. 92715, and Antonio Montenegro, 2322 N. Larchmont, Santa Ana, Calif. 92706
Filed May 10, 1979, Ser. No. 37,903
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—244

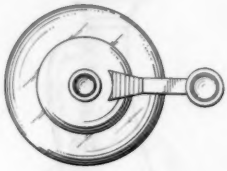


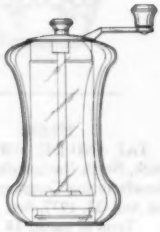
259,087
GARMENT HANGER
Mario Mainetti, Valdagno, Italy, assignor to Mainetti S.p.A., Castelgomberto, Italy
Continuation-in-part of Ser. No. 807,532, Jun. 17, 1977, abandoned. This application Sep. 18, 1978, Ser. No. 943,542
Claims priority, application Italy, Dec. 23, 1976, 61962/76[U]
Term of patent 14 years
Int. Cl. D06—*08*
U.S. Cl. D6—254



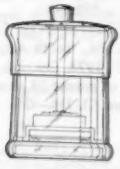
259,088
COMBINED HOLDER AND BEVERAGE GLASS, VASE OR SIMILAR ARTICLE
Eugene R. Signorile, 2637 N. Southport, Chicago, Ill. 60614
Filed Nov. 29, 1978, Ser. No. 964,481
Term of patent 14 years
Int. Cl. D07—*01;* D11—*02*
U.S. Cl. D7—15

259,089
PEPPER MILL
David A. Cowan, London, England, assignor to Cole & Mason, U.S.A., Ltd., Great Neck, N.Y.
Filed Apr. 27, 1979, Ser. No. 34,156
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—53



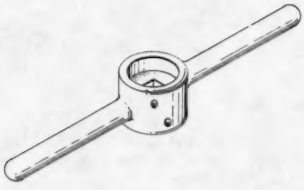


259,090
COMBINED SALT AND PEPPER MILL
David A. Cowan, London, England, assignor to Cole & Mason, U.S.A., Ltd., Great Neck, N.Y.
Filed Apr. 27, 1979, Ser. No. 34,157
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—53

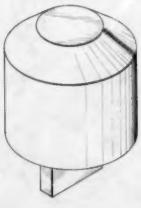


259,091
PITCHER
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 21, 1979, Ser. No. 22,258
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—64

259,092
TAP AND DIE WRENCH
Edward M. Rolnick, North Dartmouth, Mass., assignor to Gulf & Western Manufacturing Company, Southfield, Mich.
Filed Aug. 22, 1977, Ser. No. 826,428
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—98



259,093
WINDING ATTACHMENT FOR TAPE CASSETTE
Jerry Iovino, 2 Geraldine Rd., North Arlington, N.J. 07032
Filed Oct. 27, 1978, Ser. No. 955,220
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—310



259,094
BOTTLE OR SIMILAR ARTICLE
Richard L. Weckman, Perrysburg, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Oct. 30, 1978, Ser. No. 955,995
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—375

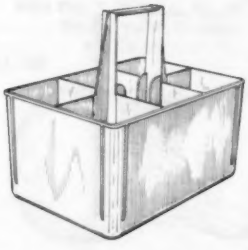
259,095
BOTTLE
Stuart E. Benedict, Pleasantville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Jun. 28, 1978, Ser. No. 919,858
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—409

259,096
BEVERAGE CONTAINER
Rolf Dittmeyer, Reiherstieg-Hauptdeich 39-47, 2102 Hamburg 93, Fed. Rep. of Germany
Filed Feb. 22, 1977, Ser. No. 770,656
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 6610343
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—318

259,097
BOTTLE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 6, 1978, Ser. No. 884,094
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—394

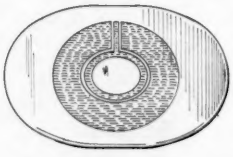
259,098
COLOGNE BOTTLE
Ralph Lauren, New York, N.Y., assignor to Warner/Lauren Ltd., New York, N.Y.
Filed Jul. 10, 1978, Ser. No. 923,417
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—413

259,099
BOTTLE CARRIER
Frank E. Davis, 3103 Westador Dr., Arlington, Tex. 76015
Filed Jan. 19, 1979, Ser. No. 4,688
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D99—48

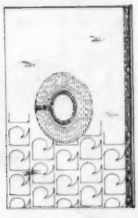


259,100
DISPLAY CONTAINER FOR A HANDKERCHIEF
Marvin A. Markowitz, Los Angeles, Calif., assignor to David Hersh & Associates, Los Angeles, Calif.
Filed Feb. 12, 1979, Ser. No. 11,501
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—415

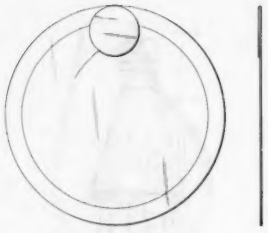
259,101
BOX
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,464
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D9—414



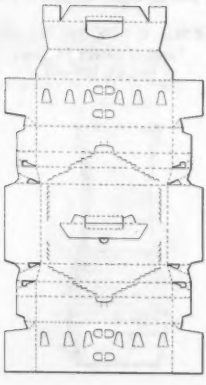
259,102
CARTON
Adam J. Grodin, Forest Hills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sep. 21, 1978, Ser. No. 944,474
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—414



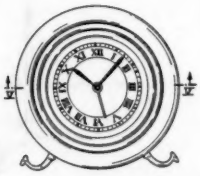
259,103
CONTAINER COVER
Raymond G. Scott, Oak Brook, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.
Filed Dec. 21, 1978, Ser. No. 971,953
Term of patent 14 years
Int. Cl. D09—*07*
U.S. Cl. D9—438



259,104
ARTICLE CARRIER BLANK
Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Mar. 30, 1979, Ser. No. 25,370
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433



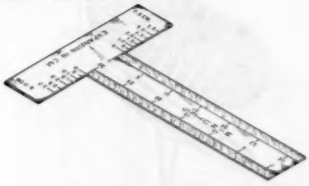
259,105
ALARM CLOCK
Robert Hocq, Boulogne-Billancourt, France, assignor to Cartier International B.V., Amsterdam, Netherlands
Filed Jul. 5, 1978, Ser. No. 922,161
Claims priority, application France, Jan. 4, 1978, 78 40916
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—23



259,106
COMBINED POCKET WATCH AND CALCULATOR
Donald J. Day, Suite 1216, Two Turtle Creek Village, Dallas, Tex. 75219
Filed Sep. 25, 1978, Ser. No. 945,572
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—31

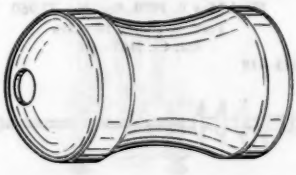
259,107
WRIST WATCH
Yutaka Fukumura, Higashi-murayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed May 17, 1978, Ser. No. 907,044
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38

259,108
GRADUATED T-SCALE
Frederick W. Holler, III, Cherry Hill, N.J., assignor to Event Systems, Inc., Moorestown, N.J.
Filed Jul. 19, 1979, Ser. No. 58,958
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—65

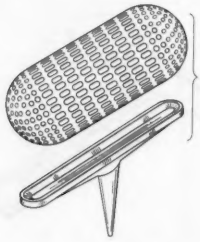


259,109
JEWELRY PENDANT
Judith M. Murphy, 400 Bay Dr., West Atlantic City, N.J. 08232
Filed Nov. 2, 1978, Ser. No. 957,202
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—75

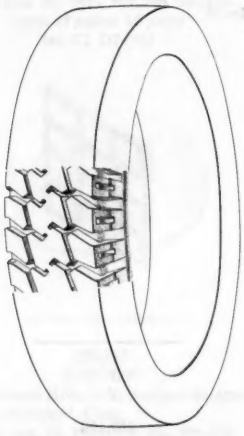
259,110
EARRING FASTENER
Robert Russell, Cranston, R.I., assignor to General Mills Products Corp., Minneapolis, Minn.
Filed Dec. 7, 1978, Ser. No. 967,185
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—88



259,111
SPORT NOVELTY DEVICE
Fay Kinney, P.O. Box 18491, Tampa, Fla. 33609
Filed Oct. 2, 1978, Ser. No. 947,933
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—157

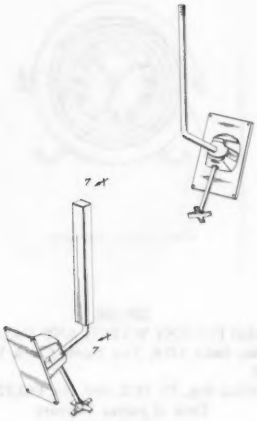


259,112
PNEUMATIC TIRE TREAD AND BUTTRESS
Gerassimos C. Candiliotis, Grosse Pointe Farms, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 17, 1979, Ser. No. 40,007
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146

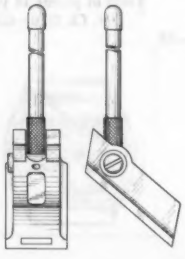


259,113
INSULATED CONDUCTOR STANDOFF
Richard N. Essig, Jackson, Mich., assignor to Plastigage Corporation, Jackson, Mich.
Filed May 9, 1979, Ser. No. 37,960
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—18

259,114
SPEAKER MOUNTING BRACKET
Alexander Cyrell, 6684 Bonair Pl., Hollywood, Calif. 90028
Filed Jun. 29, 1978, Ser. No. 920,235
Term of patent 14 years
Int. Cl. D14—*01, 99*
U.S. Cl. D14—37

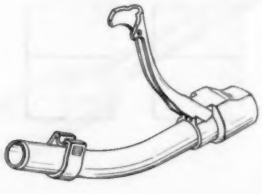


259,115
COMMUNICATIONS ANTENNA ASSEMBLY AND BASE THEREFOR
Robert J. Steinhofer, and Edward E. Elste, both of Franklin Park, Ill., assignors to Avanti Research & Development, Inc., Addison, Ill.
Filed Jun. 9, 1978, Ser. No. 914,845
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—86

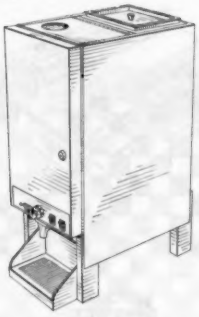


259,116
ENGINE INTAKE MANIFOLD
Anthony J. Pappas, Indianapolis, Ind., assignor to AJP International Inc., Indianapolis, Ind.
Filed Jun. 29, 1978, Ser. No. 920,390
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5

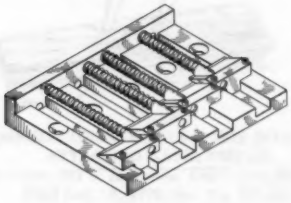
259,117
POWER COUPLING HANDLE FOR USE WITH VACUUM CLEANER
Yoshiaki Ueda, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Dec. 12, 1978, Ser. No. 968,670
Claims priority, application Japan, Jun. 14, 1978, 53-25006
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—62



259,118
BEVERAGE DISPENSING MACHINE
William M. Bardeau, 158 Norfinch Dr., Downsview, Ontario, Canada (M3N 1Y1)
Filed Mar. 26, 1979, Ser. No. 24,019
Claims priority, application Canada, Mar. 20, 1979, 20-03-79-3
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D15—112

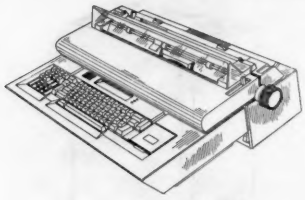


259,119
COMBINED BRIDGE AND STRING ANCHORING DEVICE FOR BASS GUITARS
Glen D. Quan, 561 Darien Way, San Francisco, Calif. 94127
Filed May 8, 1978, Ser. No. 903,981
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—21

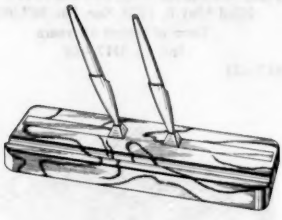


259,120
MUSIC BOX
Chong T. Ahn, 923 Fulton Ave., San Leandro, Calif. 94577
Filed Mar. 13, 1978, Ser. No. 885,789
Term of patent 14 years
Int. Cl. D17—*05*
U.S. Cl. D17—24

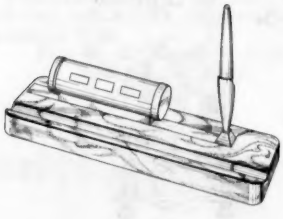
239,121
TEXT EDITING MACHINE
Mario Bellini, Milan, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Italy
Filed Jun. 27, 1978, Ser. No. 922,334
Claims priority, application Italy, Dec. 27, 1977, 53788 A/77
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—13



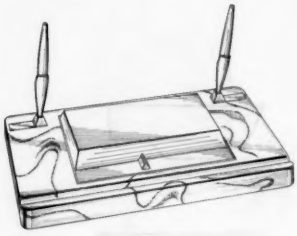
259,122
DESK SET
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 18, 1978, Ser. No. 907,371
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—75



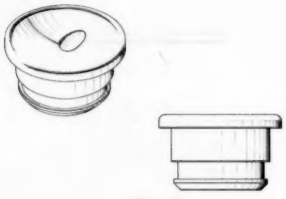
259,123
DESK SET
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 18, 1978, Ser. No. 907,381
Term of patent 14 years
Int. Cl. D19—*03, 06*
U.S. Cl. D19—75



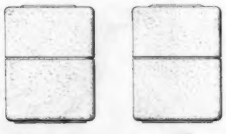
259,124
DESK SET
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 18, 1978, Ser. No. 907,382
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—75



259,125
PEN HOLDER
Clayton A. Laughlin, Minneapolis, Minn., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Jul. 25, 1979, Ser. No. 60,524
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—84

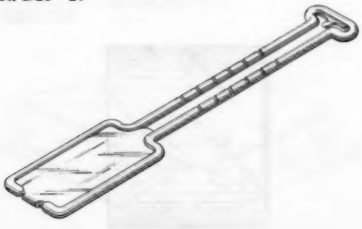


259,126
PENCIL WELL
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed Jul. 18, 1979, Ser. No. 58,999
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—85

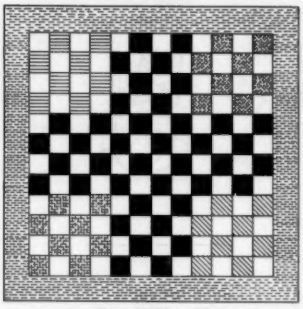


259,127
MEMO PAPER HOLDER OR SIMILAR ARTICLE
David V. Olson, 324 IDS Tower, Minneapolis, Minn. 55402
Filed Dec. 1, 1978, Ser. No. 965,589
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—92

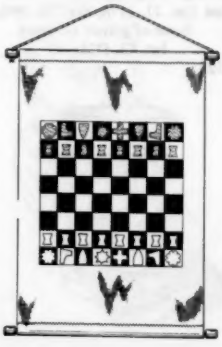
259,128
LUGGAGE MARKER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 16, 1979, Ser. No. 66,901
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D20—27



259,129
CHESS BOARD
Gary D. Weiss, 46-233 Kalai St., Kaneohe, Hi. 96744
Filed May 25, 1978, Ser. No. 909,705
The portion of the term of this patent subsequent to Jun. 6, 1995, has been disclaimed.
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—24

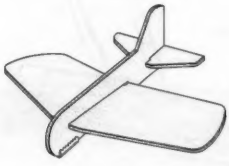


259,130
COMBINED CHESS SCROLL GAME BOARD AND ATTACHED GAME PIECES
John D. Greiner, 307 S. Riverside, Ames, Iowa 50010
Filed Oct. 18, 1978, Ser. No. 952,240
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—24



259,131
AMUSEMENT TOY
Hitoshi Itakura, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan
Filed Jun. 5, 1978, Ser. No. 912,935
Claims priority. application Japan, May 18, 1978, 78 20501
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

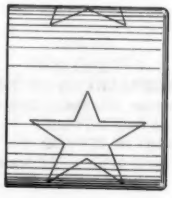
259,132
TOY AIRPLANE
Sheldon N. Spizz, 41 Gage Ct., Freehold, N.J. 07728
Filed Feb. 5, 1979, Ser. No. 9,414
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—89

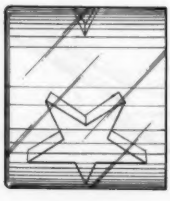


259,133
TOY BLENDER
Ronald R. Klawitter, Gasconade County, Mo., assignor to Steven Manufacturing Company
Filed Apr. 17, 1978, Ser. No. 896,820
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122

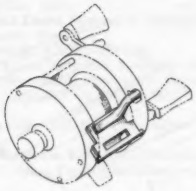
259,134
GOLF PUTTER HEAD
Floyd V. Bernhardt, 5532 N. High School Rd., Indianapolis, Ind. 46254
Filed Nov. 25, 1977, Ser. No. 854,989
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

259,135
SKATE WHEEL
Dana C. Dillard, 10123 242nd Pl., Southwest Edmonds, Wash. 98020
Filed Dec. 20, 1977, Ser. No. 862,937
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—227

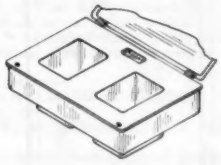




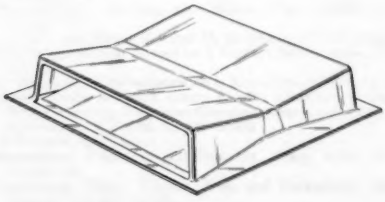
259,136
FISHING REEL FREE SPOOL ACTIVATOR
Robert L. McMickle, Spirit Lake, Iowa, assignor to Berkley & Company, Inc., Spirit Lake, Iowa
Filed Jul. 25, 1979, Ser. No. 60,484
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



259,137
PORTABLE SINK
Donna G. Knox, 1241 McClellan, Detroit, Mich. 48214
Filed May 7, 1979, Ser. No. 36,789
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—62

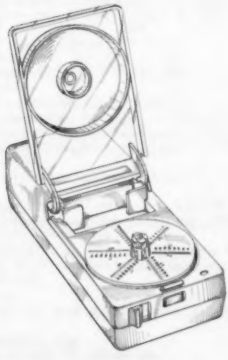


259,138
MOTOR VEHICLE AIR VENT
William E. Giles, 9782 Central, Garden Grove, Calif. 92644
Filed Mar. 22, 1979, Ser. No. 23,016
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—153

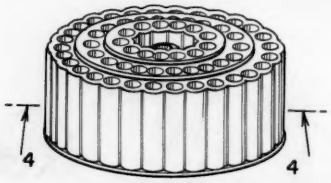


259,139
X-RAY SHIELD
Alice L. Johnson, Redmond, Oreg., assignor to Shielding, Inc., Madras, Oreg.
Filed Dec. 21, 1978, Ser. No. 971,957
Term of patent 14 years
Int. Cl. D24—*99*; D2—*2*
U.S. Cl. D24—2

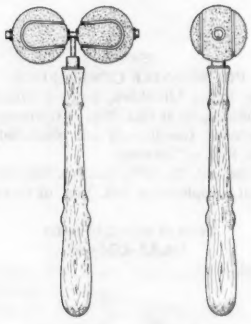
259,140
POCKET-SIZE CENTRIFUGE
Wilhelm Pross; Franz Mühlböck, both of Munich, and Otto Wienchol, Pullach, all of Fed. Rep. of Germany, assignors to Compur-Electronic Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany
Filed Jul. 19, 1978, Ser. No. 926,138
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1978, 11242
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—22



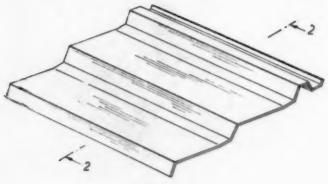
259,141
TEST TUBE HOLDER
Louise I. Oliver, 538 W. 79th St., Los Angeles, Calif. 90044
Filed Feb. 12, 1979, Ser. No. 11,532
Term of patent 14 years
Int. Cl. D24—*02, 99*
U.S. Cl. D24—32



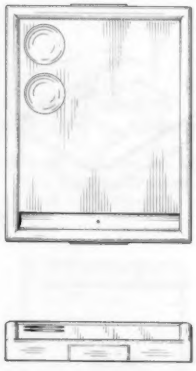
259,142
MASSAGE IMPLEMENT
Robert W. Lee, Rte. 1, Box 42, Baxter, Tenn. 38544, and Robert H. Fulkerson, 1009 E. Pearl St., Hazel Park, Mich. 48030
Filed Nov. 24, 1978, Ser. No. 963,464
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D24—36



259,143
ROOFING PANEL
Nigel G. Aktinson, Aldridge, England, assignor to British Industrial Plastics Limited, Manchester, England
Filed Jun. 12, 1979, Ser. No. 47,693
Claims priority, application United Kingdom, Dec. 16, 1978, 53-987696
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



259,144
SMALL ANIMAL CAGE BASE
Milton O. Carlin, 13111 E. 11th St., Tulsa, Okla. 74108
Filed Jan. 18, 1979, Ser. No. 4,471
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF MAY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. E. Staley Manufacturing Company: *See*—
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A.R.A. Manufacturing Co.: *See*—
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A/S Akers Mek. Verksted: *See*—
Nybo, Reidar, 4,265,567, Cl. 405-195.000.

Aakalu, Nandakumar G.; and Rittmiller, Lawrence A., to International Business Machines Corporation. Non-bleeding thixotropic thermally conductive material. 4,265,775, Cl. 252-573.000.

AB Volvo: *See*—
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Abbin, Joseph P., Jr.; Middleton, John N.; and Schildknecht, Harold E., to United States of America, Energy. Acceleration switch. 4,266,107, Cl. 200-61.530.

ABC Extrusion Company: *See*—
Brooks, Jackson R., 4,265,039, Cl. 40-603.000.

Abcor, Inc.: *See*—
Mir, Leon; and Zahka, Joseph, 4,265,642, Cl. 55-85.000.

Abe, Masaru; and Sakai, Yoshihiro, to Bridgestone Tire Company Limited. Pneumatic tire having anti-transverse skid property for vehicles which run at high speed under heavy load. 4,265,287, Cl. 152-209.00R.

Abel, Kenneth; and Buck, Robert T., to Becton Dickinson & Company. Device for dilution and delivery of in vivo chemicals. 4,265,760, Cl. 210-282.000.

Abend, Irving J. Electronic speech processing system. 4,266,094, Cl. 179-1.00D.

Abendschein, Frederic H.: *See*—
Sumner, Lee E., Jr.; Cooper, Kenneth W.; and Abendschein, Frederic H., 4,265,298, Cl. 165-2.000.

Aboussouan, Michel F. Tape cartridge dispenser. 4,265,369, Cl. 221-87.000.

Abraham, Fayez, to Tyler Refrigeration Corporation. Refrigerated display case using air defrost with supplemental heater. 4,265,092, Cl. 62-155.000.

Abraham, Fayez F., to Tyler Refrigeration Corporation. Glass door merchandiser with ambient air defrost. 4,265,090, Cl. 62-82.000.

Abraham, William W., to Consolidated Medical Equipment Inc. Skin conducting electrode and electrode assembly. 4,265,253, Cl. 128-798.000.

AccuRay Corporation: *See*—
Crawford, Juan H., 4,266,142, Cl. 250-572.000.

ACF Industries, Inc.: *See*—
Neff, Robert K.; and Hillstead, David P., 4,265,182, Cl. 105-197.00D.

Achener, Claude, to Saint-Gobain Industries. Method for preparing a preform for optical waveguides. 4,265,649, Cl. 65-18.000.

Ackermann, Peter: *See*—
Gsell, Laurenz; Ackermann, Peter; and Wehrli, Rudolf, 4,265,897, Cl. 424-269.000.

Adachi, Keiichi; Hirano, Shigeo; and Tsujino, Nobuyuki, to Fuji Photo Film Co., Ltd. Direct positive silver halide light-sensitive material and method of forming direct positive image. 4,266,013, Cl. 430-410.000.

Adamek, Manfred; and Wurscher, Horst, to U.S. Philips Corporation. Drive for transporting and reversing an ink ribbon, and for withdrawing the printing head in printing devices. 4,265,551, Cl. 400-221.100.

Adams, Walter P., to Raymond Corporation, The. Reversible incremental encoding method and apparatus. 4,266,215, Cl. 340-347.00P.

Adolf, Gunther R.: *See*—
Swetly, Peter; Adolf, Gunther R.; Bodo, Gerhard; Lindner-Frimmel, Silvia J.; Meindl, Peter; and Tuppy, Hans, 4,266,024, Cl. 435-68.000.

Advanced Products Development Corporation: *See*—
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Aelion, Rene: *See*—
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Agee, John H.; and Albert, Marshall D., to American Road Equipment Co. Failsafe protection damper for a fireplace furnace. 4,265,218, Cl. 126-288.000.

Agence Nationale de Val orisation de la Recherche (ANVAR): *See*—
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AGFA-Gevaert, A.G.: *See*—
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AGFA-Gevaert N.V.: *See*—
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Timmerman, Daniel M.; De Winter, Walter F.; and Van Hoof, Albert E., 4,266,044, Cl. 525-336.000.

Ahjopalo, Hannu; and Auvinen, Jorma J., to Instrumentarium OY. Gas analyzer. 4,266,131, Cl. 250-341.000.

Ahlgren, David W.: *See*—
Munter, Arnold M.; and Ahlgren, David W., 4,265,919, Cl. 426-283.000.

Aisaka, Kazuo: *See*—
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Aisin Seiki Kabushiki Kaisha: *See*—
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Aizawa, Hiroshi: *See*—
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Ajinomoto Company, Incorporated: *See*—
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Akashi, Shunji, to Yoshida Kogyo K.K. Separable slide fastener. 4,265,004, Cl. 24-205.11R.

AKG Akustische u. Kino-gerate Gesellschaft m.b.H.: *See*—
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Akita, Hiroko: *See*—
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Akita, Yoshio: *See*—
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Aktiebolaget Bofors: *See*—
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Aktiebolaget Platmanufaktur: *See*—
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Albany International Corp.: *See*—
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Alcan Research & Development Limited: *See*—
Jack, Stanton E.; and Dark, Robert O., 4,265,938, Cl. 427-163.000.

Aleck, Benjamin J., to Grumman Aerospace Corporation. Frictional suspension damping system. 4,265,467, Cl. 280-721.000.

Alf Hannaford & Co. Pty. Ltd.: *See*—
Hopkins, Donald L., 4,265,199, Cl. 119-29.000.

Alfa Romeo S.p.A: *See*—
Garcea, Giampaolo, 4,265,206, Cl. 123-425.000.

Alfa Romeo S.p.A.: *See*—
Garcea, Giampaolo, 4,265,205, Cl. 123-425.000.

Allain, Ronald J.; and Maniscalco, Joseph P., to Nalco Chemical Company. Preparation of 1,2-tetramethyldichloro-disilane from hexamethyldisilane and methylchlorodisilane. 4,266,068, Cl. 556-430.000.

Allen-Bradley Company: *See*—
Struger, Odo J.; and Dummermuth, Ernst H., 4,266,281, Cl. 364-900.000.

Allen, Deborah L.; Farber, Milton; and Skewis, John D., to Uniroyal, Inc. Photopolymerizable composition containing chlorosulfonated polyethylene. 4,265,986, Cl. 430-18.000.

Allen, John K., to Standard Oil Company (Indiana). Non-catalytic pyrolysis of residues from aromatic carboxylic acid manufacture. 4,266,084, Cl. 585-469.000.

Allen, Walter C.: *See*—
Cormier, Raymond G.; and Allen, Walter C., 4,265,442, Cl. 271-127.000.

Allied Chemical Corporation: *See*—
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Felice, Charles J., Jr.; Evans, Francis E.; Robinson, Martin A.; and Eibeck, Richard E., 4,265,871, Cl. 423-531.000.
Harrell, Terry R.; and Pfeiffer, Robert C., 4,265,415, Cl. 242-107.40A.

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Almor Corporation: *See*—
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Alza Corporation: *See*—
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AM International, Inc.: *See*—
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Amberg, Stephen W.; and Hadl, Clyde F., to Owens-Illinois, Inc. Article infeed gate and control therefor. 4,265,357, Cl. 198-460.000.

Amemiya, Ikuzo: *See*—
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American Can Company: *See*—
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American Cyanamid Company: *See*—
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Conrow, Ransom B.; and Bernstein, Seymour, 4,265,908, Cl. 424-315.000.
Conrow, Ransom B.; and Bernstein, Seymour, 4,266,077, Cl. 562-427.000.
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American Seating Company: *See*—
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Ammann, David W.; and Granzow, Daniel B., to Baxter Travenol Laboratories, Inc. Connector member for sealed conduits. 4,265,280, Cl. 141-98.000.

AMP Incorporated: *See*—
Hollyday, Robert D., 4,265,506, Cl. 339-147.00R.

Amstar Corporation: *See*—
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Anchor Hocking Corporation: *See*—
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Andersen, Jorgen W. D.C. Motor speed control. 4,266,168, Cl. 318-331.000.

Anderson, Ardis L., to Conoco, Inc. Process for preparing blending fuel. 4,265,637, Cl. 44-51.000.

Anderson, Carl, Jr. Racquet safety tether assembly. 4,265,448, Cl. 273-29.00A.

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Anderson, George R.; Ott, Walter R.; Smoke, Edward J.; Easter, Ross A.; and Sholl, Jeffrey J., to Pillsbury Company, The. Microwave heating device and method. 4,266,108, Cl. 219-10.55E.

Anderson, James H. Heat exchanger support construction. 4,265,301, Cl. 165-162.000.

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Anderson, Nicholas. Liquid level indicator for a reservoir. 4,265,114, Cl. 73-313.000.

Anderson, Richard L.; and Fleig, William E., to Farinon Corporation. Protection control unit for a TDM system. 4,266,293, Cl. 370-14.000.

Anderson, Robert L.: *See*—
Giurtino, Joel F.; and Anderson, Robert L., 4,265,303, Cl. 165-166.000.

Andersson, Gustaf A., to Frigoscandia Contracting AB. Freezing plant for food products. 4,265,096, Cl. 62-380.000.

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Arbit, Harold A.; and Tinger, Harold G., to Mobil Oil Corporation. Films produced from LDPE encapsulated $CaCO_3$. 4,265,960, Cl. 428-220.000.

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Arnaudeau, Marcel, to Institut Francais du Petrole. Mooring station and transfer terminal for offshore hydrocarbon production. 4,265,313, Cl. 166-366.000.

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Asano, Tamoru, to Kai Cutlery Center Company Limited. Adjustable razor with blade cleaning means. 4,265,015, Cl. 30-41.000.

Aspisi, Christian R.: *See*—
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Demosthene, Claude G.; and Aspisi, Christian R., 4,266,058, Cl. 544-330.000.

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Atlantic Richfield Company: *See*—
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Au, Andrew T., to Dow Chemical Company, The. N-Substituted perhydro-s-triazines. 4,266,054, Cl. 544-215.000.

Audeh, Costandi A.; Chang, Clarence D.; and Lang, William H., to Mobil Oil Corporation. ZSM-5 Zeolite catalyzes dialkyl disulfide conversion to hydrogen sulfide. 4,265,735, Cl. 208-234.000.

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Backlin, Robert R., to Allis-Chalmers Corporation. Engine block and crankshaft bearing seal. 4,265,495, Cl. 308-23.000.

Baczek, Stanley K.; and McCain, G. Howard, to Diamond Shamrock Corporation. Recovery of polymeric cation exchange materials for reuse by converting by reaction to the precursor form. 4,266,036, Cl. 521-26.000.

Badger Company, Inc., The: *See—*
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Baehr, Donald O.; and Izard, David G., to United States Gypsum Company. Method for the production of glass fiber-reinforced gypsum sheets and gypsum board formed therefrom. 4,265,979, Cl. 428-171.000.

Bahler, Paul. Vapor distributor pipe for air humidifier. 4,265,840, Cl. 261-115.000.

Bahrenburg, Harry H. Wind fence. 4,265,086, Cl. 60-398.000.

Baird, Donald H.: *See—*
Proud, Joseph M.; and Baird, Donald H., 4,266,167, Cl. 315-248.000.

Baird, Leslie L.; and Stolz, Gary M., to General Electric Company. Lift truck for facilitating insertion and removal of horizontal draw-out switchgear unit. 4,265,583, Cl. 414-284.000.

Baird, William C., Jr.: *See—*
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Baker Industries, Inc.: *See—*
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Balaban, Alvin R.; and Steckler, Steven A., to RCA Corporation. Differential amplifier current repeater. 4,266,245, Cl. 358-153.000.

Ballast-Nedam Groep N.V.: *See—*
Verpalen, Willem A.; and Koot, Theodorus A. J., 4,265,759, Cl. 210-261.000.

Baltensperger, Rudolf; and Pfister, Hans B. Suspension-cable support saddle for track-type suspended railway. 4,264,996, Cl. 14-21.000.

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Banks, Edwin L., Jr.: *See—*
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Banno, Taiichi; and Ida, Hideaki, to Olympus Optical Co., Ltd. Liquid agitation apparatus for an absorbance measuring apparatus. 4,265,544, Cl. 356-427.000.

Baran, Joseph: *See—*
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; and Baran, Joseph, 4,265,469, Cl. 283-8.00B.

Barbara S.A.: *See—*
Bena, Gilbert A., 4,265,961, Cl. 428-253.000.

Barclay, Donald J.; and Prowting, Christopher T., to International Business Machines Corporation. Kerr effect apparatus. 4,265,543, Cl. 356-369.000.

Barger, John J., to Combustion Engineering, Inc. Clad welding on an inclined surface. 4,266,110, Cl. 219-73.210.

Bargiotti, Alberto; Cassinelli, Giuseppe; Arcamone, Federico; and DiMarco, Aurelio, to Farmitalia Carlo Erba S.p.A. Anthracyclines containing branched-chain amino-deoxy sugars. 4,265,885, Cl. 424-180.000.

Barker, Charles R., III, to Bose Products, Inc. Loudspeaker system with broad image source. 4,266,092, Cl. 179-1.00E.

Barker, Clark R., to University of Missouri, The Curators of the. High pressure water jet mining machine. 4,265,487, Cl. 299-34.000.

Barker, Joseph K. Tent. 4,265,261, Cl. 135-3.00R.

Barkley, John A., to International Business Machines Corporation. Electrophotographic photoreceptive background areas cleaned by backcharge process. 4,265,998, Cl. 430-125.000.

Barman, Alan W., to Bendix Corporation, The. Microprocessor-based engine control systems. 4,266,274, Cl. 364-431.000.

Barnett, Danny R.: *See—*
Spano, John D.; and Barnett, Danny R., 4,266,191, Cl. 324-158.00F.

Barry Cosmetic Suture Company, Inc.: *See—*
Barry, Robert J., 4,265,246, Cl. 128-330.000.

Barry, Robert J., to Barry Cosmetic Suture Company, Inc. Sterile cosmetic suture and scalp implant for attaching hair pieces. 4,265,246, Cl. 128-330.000.

Barry Wright Corporation: *See—*
Hamilton, Harold V.; and Melendy, Harold A., 4,265,434, Cl. 269-27.000.
Luce, Carl T.; Banks, Edwin L., Jr.; and Dowell, Terrence P., 4,265,498, Cl. 308-230.000.

BASF Aktiengesellschaft: *See—*
Hesse, Anton; Lechtken, Peter; Nicolaus, Walter; and Scholz, Dankmar, 4,265,723, Cl. 204-159.230.
Hjortzberg, Bernhard A., 4,266,241, Cl. 358-4.000.
Mueller-Mall, Rudolf; Wendel, Kurt; Geelhaar, Hans J.; and Melan, Michael, 4,265,796, Cl. 260-29.60R.
Tschang, Chung-Ji; Klefenz, Heinrich; and Sanner, Axel, 4,266,030, Cl. 435-180.000.

BASF Wyandotte Corporation: *See—*
Langdon, William K., 4,265,774, Cl. 252-49.300.

Batson, William A., to Singer Company, The. Motorized miter saw fence mounting. 4,265,154, Cl. 83-468.000.

Battelle Development Corporation: *See—*
Spence, Kemet D.; and Andrews, Robert E., 4,265,880, Cl. 424-93.000.

Battle Research and Development Associates: *See—*
Parker, Dawood, 4,265,250, Cl. 128-635.000.

Bauer, Benjamin B., to CBS Inc. Compatible four channel radio broadcast and receiving system. 4,266,093, Cl. 179-1.0GQ.

Bauer, Daniel; Beck, Jean-Paul; Boiteau, Claude; and Garoche, Didier, to L'Oreal. Electrode-type steam generating device for generating superheated steam. 4,266,116, Cl. 219-274.000.

Bauer, Jack N.: *See—*
DiGiulio, Adolph V.; and Bauer, Jack N., 4,266,037, Cl. 521-82.000.
DiGiulio, Adolph V.; and Bauer, Jack N., 4,266,038, Cl. 521-82.000.

Bauerle, Rolf, to Ciba-Geigy AG. Thermotransfer process for printing synthetic fibre materials with multi-color effects, and carrier for performing the process. 4,265,630, Cl. 8-456.000.

Baugh, Benton F., to Brown Oil Tools, Inc. Coiled tubing apparatus. 4,265,304, Cl. 166-77.000.

Baum, Lennart: *See—*
Weigl, Walter; Bergman, Ulf; and Baum, Lennart, 4,266,133, Cl. 250-402.000.

Bauman, Donald L.; and Toji, Masuo, to Du Pont de Nemours, E. I., and Company. Process for recovering zwitterionic diazonium salts by aggregation. 4,265,810, Cl. 260-141.000.

Baumann, Heinz; and Caillie, Charles, to Sulzer Brothers Limited. Weaving machine having noise attenuating means. 4,265,277, Cl. 139-1.00R.

Baur, Robert, to Automation Industries, Inc. Aircraft/pylon multi-contact electrical connector. 4,265,503, Cl. 339-45.00M.

Baus, Heinz G. Evaporation air humidifier. 4,265,839, Cl. 261-91.000.

Baxter Travenol Laboratories, Inc.: *See—*
Ammann, David W.; and Granzow, Daniel B., 4,265,280, Cl. 141-98.000.

Bayer Aktiengesellschaft: *See—*
Birkenstock, Udo; Lachmann, Burkhard; Metten, Josef; and Schmidt, Herbert, 4,265,834, Cl. 564-421.000.
Collin, Reimer; Diehr, Hans-Joachim; and Friesnitz, Uwe, 4,266,082, Cl. 568-639.000.
Doring, Fritz; Beck, Gunther; and Dankert, Gerhard, 4,266,059, Cl. 544-334.000.
Horstmann, Harald; Meng, Karl-August, deceased; Meng, Matthias, legal representative; Seuter, Friedel; and Moller, Eike, 4,265,898, Cl. 424-270.000.
Kinast, Gunther; and Schedel, Michael, 4,266,025, Cl. 435-84.000.
Krebs, Klaus-Werner; and Metzger, Carl, 4,265,832, Cl. 564-163.000.
Lantzsch, Reinhard, 4,265,819, Cl. 260-346.220.
Lurssen, Klaus, 4,265,656, Cl. 71-103.000.
Mitschke, Karl-Heinz; Geisler, Klaus; and Niederprum, Hans, 4,265,831, Cl. 564-96.000.
Nickel, Horst; and Schundehutte, Karl H., 4,265,813, Cl. 260-170.000.
Reinehr, Ulrich; von Falkai, Bela; and Wilschinsky, Horst, 4,265,971, Cl. 428-376.000.
Wagner, Gebhard; and Joseph, Werner, 4,265,929, Cl. 427-33.000.
Werner, Friedrich; and Blank, Heinz U., 4,265,833, Cl. 564-435.000.

Bayer, Raymond M.: *See—*
Drake, Charles A.; and Bayer, Raymond M., 4,265,450, Cl. 273-73.00G.

Bayless, Mark S. Disc shaped projectile having notched portion. 4,265,454, Cl. 273-427.000.

BBC Brown Boveri & Company Limited: *See—*
Eggmann, Jean, 4,265,594, Cl. 416-193.00A.
Eidinger, Adolf; Flossel, Carl D.; Koppl, Georg; Ulrich, Alfred; and Schibli, Hans, 4,266,258, Cl. 361-58.000.

Beasley, Glenn H.; Chong, Berni P.; Ford, Warren T.; and Neely, James W., to Rohm and Haas Company. Ion exchange material prepared from partially pyrolyzed macroporous polymer particles. 4,265,768, Cl. 210-682.000.

Beaver, Robert H.: *See—*
McDonald, Charles J.; and Beaver, Robert H., 4,265,835, Cl. 564-204.000.

Beck, Gunther: *See—*
Doring, Fritz; Beck, Gunther; and Dankert, Gerhard, 4,266,059, Cl. 544-334.000.

Beck, Jean-Paul: *See—*
Bauer, Daniel; Beck, Jean-Paul; Boiteau, Claude; and Garoche, Didier, 4,266,116, Cl. 219-274.000.

Becker, Carl, to Ciba-Geigy Corporation. Aqueous dyestuff preparations of water-insoluble or sparingly water-soluble dyes. 4,265,631, Cl. 8-471.000.

Beckley, Don A., to Hitco. Composite electrodes. 4,265,727, Cl. 204-242.000.

Beckman Instruments, Inc.: *See—*
Frankland, Roger A., 4,266,224, Cl. 340-773.000.

Becton Dickinson & Company: *See—*
Abel, Kenneth; and Buck, Robert T., 4,265,760, Cl. 210-282.000.

Bedard, Brian E.; and Boman, Bertho K., to Motorola, Inc. Stripline filter device. 4,266,206, Cl. 333-204.000.

Bedell, John R., to Allied Chemical Corporation. Foundry molds containing glassy metal alloy filaments. 4,265,665, Cl. 106-38.900.

Beiersdorf Aktiengesellschaft: *See*—
Cohnen, Erich, 4,265,903, Cl. 424-282.000.

Belfatto, Robert V., to Harris Corporation. Method and apparatus using first and second parallel channels, one of which includes an inverter, for producing an electrical signal with an improved on/off ratio. 4,266,201, Cl. 332-9.00R.

Bell & Howell Company: *See*—
Elswood, Ebbert L.; and Reynolds, Wyndall O., 4,266,287, Cl. 367-185.000.
Levy, Avner; and Karsh, Irving, 4,265,386, Cl. 226-190.000.

Bell Telephone Laboratories, Incorporated: *See*—
Bonner, William A.; and Van Uitert, LeGrand G., 4,265,980, Cl. 428-697.000.
Boros, Victor B.; and Ebert, Harry K., Jr., 4,266,182, Cl. 323-267.000.
Cannon, Thomas B.; Dalley, James E.; and George, Andrew S., 4,266,097, Cl. 179-2.00A.
Chai, Soo Young; Sautter, Helmuth O.; and Sherbon, Wallace E., 4,266,249, Cl. 358-260.000.

Bemis, John D.; and Goff, Willie, Jr., to International Business Machines Corporation. Ribbon drive mechanism for high speed printer. 4,265,552, Cl. 400-236.000.

Bena, Gilbert A., to Barbara S.A. Building device. 4,265,961, Cl. 428-253.000.

Benasutti, John E.: *See*—
Wellington, Charles K.; Dakss, Mark L.; and Benasutti, John E., 4,265,514, Cl. 350-96.210.

Bendix Corporation, The: *See*—
Barman, Alan W., 4,266,274, Cl. 364-431.000.
Bourdon, Normand C., 4,265,505, Cl. 339-99.00R.
Hanisko, John C. P., 4,265,210, Cl. 123-490.000.
Marchak, Roman O., 4,266,275, Cl. 364-431.000.
Shutt, Paul B., 4,265,491, Cl. 303-6.00C.

Bengston, Merle A.: *See*—
Reed, Robert D.; and Bengston, Merle A., 4,265,611, Cl. 431-3.000.

Benhase, George J., Jr., to General Electric Company. Apparatus for lubrication of a differential bearing mounted between concentric shafts. 4,265,334, Cl. 184-6.110.

Benner-Nawman, Inc.: *See*—
Nawman, Rollie B., 4,265,499, Cl. 312-100.000.

Bennett, Robert J.: *See*—
Oshel, J. Bryan; and Bennett, Robert J., 4,265,588, Cl. 414-786.000.

Bennett, Thomas H.: *See*—
Daniels, R. Gary; Musa, Fuad H.; Wilder, William B., Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,266,270, Cl. 364-200.000.

Benton, Reuben P.: *See*—
Schreyer, Kenneth D.; Leverentz, Earl T.; Nusz, Thomas R.; and Benton, Reuben P., 4,265,181, Cl. 105-150.000.

Berberick, Norbert J., Jr.: *See*—
Sperti, George S.; and Berberick, Norbert J., Jr., 4,265,926, Cl. 427-2.000.

Beretta, Pier C., to Fabbrica D'Armi Pietro Beretta S.p.A. Double-barrel shotgun. 4,265,044, Cl. 42-41.000.

Beretta, Pier C., to Fabbrica D'Armi Pietro Beretta S.p.A. Means for controlling rapid-fire in an automatic weapon. 4,265,161, Cl. 89-129.00B.

Berger, Ernst; and Herwegh, Norbert, to Datwyler AG.Schweiz, Kabel-, Gummi- und Kunststoffwerke. Solar collector element. 4,265,225, Cl. 126-445.000.

Berglund, David E., to Minnesota Mining and Manufacturing Company. Paper sheet stacker. 4,265,444, Cl. 271-207.000.

Berglund, Neil C.; and Kempke, William G., to International Business Machines Corporation. Transient microcode block check word generation control circuitry. 4,266,272, Cl. 364-200.000.

Bergman, Ulf: *See*—
Weigl, Walter; Bergman, Ulf; and Baum, Lennart, 4,266,133, Cl. 250-402.000.

Bergmann, Gunther, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit arrangement for operating electromechanical switching devices. 4,266,150, Cl. 307-268.000.

Bergwerksverband GmbH: *See*—
Gappa, Gunther; Juntgen, Harald; and Klein, Jurgen, 4,265,767, Cl. 210-662.000.
Lennartz, Rudiger; and Romey, Ingo, 4,265,771, Cl. 210-769.000.

Berney, Jean-Claude, to Jean-Claude Berney SA. Electronic timepiece. 4,266,288, Cl. 368-28.000.

Bernhardt, Floyd V. Golf putter. 4,265,451, Cl. 273-167.00G.

Bernstein, Seymour; and Poletto, John F., to American Cyanamid Company. Halogenated-naphthalenetriyltris(sulfonylimino)-aryl disulfonic acids and salts thereof. 4,265,829, Cl. 260-510.000.

Bernstein, Seymour: *See*—
Conrow, Ransom B.; and Bernstein, Seymour, 4,265,830, Cl. 260-510.000.
Conrow, Ransom B.; and Bernstein, Seymour, 4,265,908, Cl. 424-315.000.
Conrow, Ransom B.; and Bernstein, Seymour, 4,266,077, Cl. 562-427.000.

Berthelot, Daniel, to S.A. Martin. Automatic lengthwise receiver for stacking panels of different form and size and method of use. 4,265,443, Cl. 271-182.000.

Berton, Marcello; and Ceccarelli, Pietro, to Ing. C. Olivetti & C., S.p.A. Metal furniture in sectional units. 4,265,500, Cl. 312-107.000.

Bertotti, Franco; and Foroni, Mario, to SGS ATES Componenti Elettronici S.p.A. I-C Wafer incorporating junction-type field-effect transistor. 4,266,233, Cl. 357-22.000.

Best, Albert B., to Kanthal Corporation, The. Hairpin-type electric resistance heating element. 4,266,119, Cl. 219-541.000.

Bestenreiner, Friedrich: *See*—
Simm, Walter; and Bestenreiner, Friedrich, 4,265,996, Cl. 430-119.000.

Bestenreiner, Frledrich; and Birgmeir, Klaus, to AGFA-Gevaert, A.G. Photographic camera with automatic focussing system. 4,265,528, Cl. 354-195.000.

Betherb, Inc.: *See*—
Levine, Beth, 4,265,032, Cl. 36-11.500.

Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, to Siemens Aktiengesellschaft. Resonator formed in integrated MOS technology utilizing switched capacitors. 4,266,205, Cl. 333-165.000.

Beynon, Dell R., Jr.: *See*—
Johnson, Earl L.; and Beynon, Dell R., Jr., 4,265,052, Cl. 49-63.000.

Bianco, Andrew S., to Huffy Corporation. Reversible closure-spout assembly. 4,265,378, Cl. 222-539.000.

Biansan, Jean-Paul: *See*—
Saudreau, Lucien; and Biansan, Jean-Paul, 4,266,203, Cl. 333-21.00A.

Bickel, Hans: *See*—
Kocsis, Karoly; Peter, Heinrich; and Bickel, Hans, 4,265,892, Cl. 424-246.000.

Bielefeldt, Ernst-August, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Method and apparatus for separating particles from a flow by centrifugal force. 4,265,640, Cl. 55-1.000.

Bilge, Umit: *See*—
Dubetz, Martin W.; and Bilge, Umit, 4,265,119, Cl. 73-588.000.

Billgren, Per A.; and Karlsson, Stig A., to Uddeholms Aktiebolag AB. Method of separating a solid and a liquid phase of a mass. 4,265,700, Cl. 159-47.00R.

Binks Manufacturing Company: *See*—
Haase, Martin O., Jr., 4,266,262, Cl. 361-228.000.

Birchall, James D.: *See*—
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., 4,265,406, Cl. 241-16.000.

Birgmeir, Klaus: *See*—
Bestenreiner, Frledrich; and Birgmeir, Klaus, 4,265,528, Cl. 354-195.000.

Birkenstock, Udo; Lachmann, Burkhard; Metten, Josef; and Schmidt, Herbert, to Bayer Aktiengesellschaft. Process for the catalytic hydrogenation of nitrobenzene. 4,265,834, Cl. 564-421.000.

Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, to Agence Nationale de Val orisation de la Recherche (ANVAR). Dipyrido [4,3-b] [3,4-f] indoles and process for obtaining them. 4,266,060, Cl. 546-64.000.

Bishara, Jeries I.: *See*—
Suchanski, Mary R.; and Bishara, Jeries I., 4,265,728, Cl. 204-290.00F.

Black & Decker Inc.: *See*—
Schrock, Martin O.; Howard, Thomas J., Jr.; and Jinkins, Danny R., 4,265,018, Cl. 30-276.000.
Wagster, Robert P.; and Pizzuto, Russell, 4,265,436, Cl. 269-274.000.

Blackburn, Charles M.: *See*—
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,265,074, Cl. 53-551.000.

Blaese, Herbert R., to Avanti Research & Development, Inc. Mounting for mobile communications antenna. 4,266,227, Cl. 343-715.000.

Blair, Gerald E.; Merry, J. Bradford; and Wylot, James M., to Eastman Kodak Company. Acousto-optic device and method using tellurite glass composition. 4,265,517, Cl. 350-358.000.

Blair, James E.; and Davis, Lois T., to Sybron Corporation. Process for decolorizing pulp and paper mill wastewater and microorganism capable of same. 4,266,035, Cl. 435-253.000.

Blank, Heinz U.: *See*—
Werner, Friedrich; and Blank, Heinz U., 4,265,833, Cl. 564-435.000.

Blaugher, Richard D.; and Hopkins, Richard H., to Westinghouse Electric Corp. Development of grain-oriented iron sheet for electrical apparatus. 4,265,683, Cl. 148-120.000.

Blodee, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., to American Seating Company. Panel wall systems with modular component build-up. 4,265,502, Cl. 312-109.000.

Blom, Cornelis W.; and van Keulen, Jacobus M., to Hoeka Sierpleisters En Muurverven B.V. Method for the treatment of wood by a wood preserving agent, as well as wood treated with such a wood preservative agent. 4,265,958, Cl. 428-166.000.

Blome, James C., to Swiss Aluminium Ltd. Molten metal filter. 4,265,659, Cl. 75-93.00R.

Bock, Erich: *See*—
Braun, Erwin; Bock, Erich; Handschuch, Karl; and Schuller, Edmund, 4,265,083, Cl. 57-263.000.

Bocsanczy, Janos; Offermann, Ludwig; and Stalherm, Dieter, to Carl Still, Firma. Method and apparatus for separating gases and solids during the carbonization of coal. 4,265,709, Cl. 201-4.000.

Bodas, Janos: *See*—
Heller, Laszlo; Forgo, Laszlo; Papp, Istvan; Bodas, Janos; Kovacs, Gyula; and Laszlo, Karoly, 4,265,275, Cl. 138-38.000.

Bodine, Albert G. Orbiting mass oscillator with oil film cushioned bearings. 4,265,129, Cl. 74-61.000.

Bodo, Gerhard: *See—*
Swetly, Peter; Adolf, Gunther R.; Bodo, Gerhard; Lindner-Frimmel, Silvia J.; Meindl, Peter; and Tuppy, Hans, 4,266,024, Cl. 435-68.000.

Boehringer Ingelheim GmbH: *See—*
Swetly, Peter; Adolf, Gunther R.; Bodo, Gerhard; Lindner-Frimmel, Silvia J.; Meindl, Peter; and Tuppy, Hans, 4,266,024, Cl. 435-68.000.

Boeing Company, The: *See—*
Harp, Marlyn F.; Diepenbrock, James L., Jr.; and Nelsen, M. Dean, 4,265,955, Cl. 428-116.000.
McTigue, Larry D.; and Pinson, George T., 4,266,173, Cl. 318-585.000.
Mercer, Paul W.; and Stock, Howard P., 4,265,687, Cl. 156-73.100.
Watts, John, 4,265,417, Cl. 244-50.000.

Bogdan, Ronald F.: *See—*
Frost, Stuart J.; Riley, Edward J.; and Bogdan, Ronald F., 4,265,023, Cl. 33-174.00C.

Boiteau, Claude: *See—*
Bauer, Daniel; Beck, Jean-Paul; Boiteau, Claude; and Garoche, Didier, 4,266,116, Cl. 219-274.000.

Bolen, Charles E.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,265,563, Cl. 404-75.000.

Boll, Richard, to Vacuumschmelze GmbH. Magnetic core comprised of low-retentivity amorphous alloy. 4,265,684, Cl. 148-121.000.

Bollinger, Wayne A.; and Guay, Roger G., to Monsanto Company. Permeator apparatus. 4,265,763, Cl. 210-323.200.

Boman, Bertho K.: *See—*
Bedard, Brian E.; and Boman, Bertho K., 4,266,206, Cl. 333-204.000.

Bon Aqua, Inc.: *See—*
Menold, Herman E., 4,265,754, Cl. 210-222.000.
Zimmerman, George M., 4,265,755, Cl. 210-222.000.
Zimmerman, George M., Sr.; and Menold, Herman E., 4,265,746, Cl. 210-695.000.

Bondgrade Limited: *See—*
Taylor, George O., 4,265,284, Cl. 144-287.000.

Bonetti, Ralph A., to Advanced Products Development Corporation. Controlled irrigation system for a predetermined area. 4,265,403, Cl. 239-66.000.

Bonjouklian, Rosanne, to Eli Lilly and Company. Process for 3-iodomethyl cephalosporins. 4,266,049, Cl. 544-16.000.

Bonnemann, Helmut; and Samson, Marc, to Studiengesellschaft Kohle mbH. Process for preparation of 2-vinylpyridine from acetylene and acrylonitrile. 4,266,061, Cl. 546-253.000.

Bonner, William A.; and Van Uitert, LeGrand G., to Bell Telephone Laboratories, Incorporated. Technique for the growth of magnetic garnet compositions. 4,265,980, Cl. 428-697.000.

Bonsen, Pieter; Wong, Patrick S.; and Theeuwes, Felix, to Alza Corporation. Method of delivering drug with aid of effervescent activity generated in environment of use. 4,265,874, Cl. 424-15.000.

Borca, Giancarlo C.: *See—*
Donnis, Gian P.; and Borca, Giancarlo C., 4,265,550, Cl. 400-196.100.

Bordas, Robert; Lacharmoise, Paul; and Moteruil, Gilbert. Closet for the conservation of wine in bottles or other foodstuffs. 4,265,097, Cl. 62-438.000.

Borenstein, David E., to Phillips Petroleum Company. Method for producing multifilament thermoplastic yarn having latent crimp. 4,265,849, Cl. 264-168.000.

Boretos, John W.; and Iriguchi, Norio, to United States of America, Health, Education and Welfare. Method of making unitized three leaflet heart valve. 4,265,694, Cl. 156-242.000.

Borg-Warner Corporation: *See—*
Harnish, James R., 4,265,299, Cl. 165-12.000.
Newton, Alwin B., 4,265,093, Cl. 62-198.000.
Smirl, Richard L., 4,265,135, Cl. 74-336.00B.
Sumner, Lee E., Jr.; Cooper, Kenneth W.; and Abendschein, Frederic H., 4,265,298, Cl. 165-2.000.

Bornfleth, Ulrich: *See—*
Koch, Franz-Peter; Pinck, Peter; Petersen, Kurt-Eckard; Lange, Norbert; Kohler, Elke; and Bornfleth, Ulrich, 4,265,254, Cl. 131-281.000.

Boros, Victor B.; and Ebert, Harry K., Jr., to Bell Telephone Laboratories, Incorporated. Common control with frequency drift compensation for a plurality of switching regulators. 4,266,182, Cl. 323-267.000.

Bose Products, Inc.: *See—*
Barker, Charles R., III, 4,266,092, Cl. 179-1.00E.

Boteler, William C., to Slater Electric Inc. Moisture resistant electrical outlet box. 4,265,365, Cl. 220-3.300.

Bourdois, Claude; Decolle, Maurice; Ferard, Michel; and Marchal, Paul, to Commissariat a l'Energie Atomique. Process for the pneumatic transfer of a pulverulent material. 4,265,572, Cl. 406-114.000.

Bourdon, Normand C., to Bendix Corporation, The. Electrical connector. 4,265,505, Cl. 339-99.00R.

Bowman, Jeffrey M., to International Telephone and Telegraph Corporation. Mechanical force multiplier. 4,265,141, Cl. 74-516.000.

Bowthorpe-Hellermann Limited: *See—*
McCormick, Mathew, 4,265,420, Cl. 248-56.000.

Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N. Thermal-mine oil production method. 4,265,485, Cl. 299-2.000.

Boy, Juergen: *See—*
Lange, Gerhard; and Boy, Juergen, 4,266,260, Cl. 361-120.000.

Boyer, Stanton L.; and Nicholson, Denzel A., to Procter & Gamble Company, The. Detergent compositions containing an aluminosilicate detergency builder and an unsaturated fatty acid soap. 4,265,777, Cl. 252-113.000.

Brachthauser, Kunibert; and Herchenbach, Horst, to Klockner-Humboldt-Deutz AG. Method and apparatus for the thermal treatment of fine-grained material with hot gases. 4,265,670, Cl. 106-100.000.

Bracilovic, Dragomir: *See—*
Winston, Anthony E.; Cala, Francis R.; Lengyel, Stephen P.; Kirschner, Lawrence; and Bracilovic, Dragomir, 4,265,790, Cl. 252-532.000.

Braden, Arthur B.: *See—*
Kuwik, John J.; Braden, Arthur B.; Taylor, Samuel K.; and Covic, John, 4,266,135, Cl. 250-445.00T.

Brand, Stanley W. Apparatus and method for de-actuating swimming pool equipment. 4,265,598, Cl. 417-40.000.

Braner Enterprises, Inc.: *See—*
Lopez, Esteban; and Matsunaga, Douglas, 4,265,155, Cl. 83-479.000.

Branner-Jorgensen, Sven, to Novo Industri A/S. Enzyme immobilization. 4,266,029, Cl. 435-176.000.

Branson Ultrasonics Corporation: *See—*
Summo, Arthur M., 4,265,842, Cl. 264-23.000.

Braun, Bernd, to Intermedicat GmbH. Anti-thrombogenic retentive catheter. 4,265,928, Cl. 427-2.000.

Braun, Dennis H.; and Spink, Robert W., to Eaton Corp. Secondary thyristor control for AC wound rotor motors. 4,266,175, Cl. 318-758.000.

Braun, Erwin; Bock, Erich; Handschuch, Karl; and Schuller, Edmund, to Schubert & Salzer. Process and apparatus for individual piecing up of single open end spinning apparatus. 4,265,083, Cl. 57-263.000.

Breithaupt, David W., to RCA Corporation. Remote control TV subcarrier phase shifter system. 4,266,197, Cl. 328-55.000.

Brenholt, David L., to Donaldson Company, Inc. Filter assembly for use in the filtration of medical treatment liquids. 4,265,762, Cl. 210-321.100.

Breskman, Joseph S. Composition and method for treatment of hemorrhoids. 4,265,887, Cl. 424-201.000.

Breslau, Barry R., to Rohm and Haas Company. Catalytic process utilizing hollow fiber membranes. 4,266,026, Cl. 435-99.000.

Breslow, David S., to Hercules Incorporated. Disproportionation of rosin in the presence of dithiin derivatives. 4,265,807, Cl. 260-97.500.

Breveteam S.A.: *See—*
Colijn, Johannes J. V., 4,265,956, Cl. 428-134.000.

Bridgestone Tire Company Limited: *See—*
Abe, Masaru; and Sakai, Yoshihiro, 4,265,287, Cl. 152-209.00R.
Kaneko, Yoshio; Yamauchi, Makoto; Shiozawa, Shinji; Hayakawa, Yoshihiro; and Banba, Fumio, 4,265,288, Cl. 152-209.00R.

Bristol, Robert G., to Emhart Industries, Inc. Detection means for multiple capacitive sensing devices. 4,266,144, Cl. 307-116.000.

Britton, Michael W.; Martin, William L.; McDaniel, Jack D.; and Wahl, Harry A., to Continental Oil Company. Fracture preheat oil recovery process. 4,265,310, Cl. 166-259.000.

Brooks, Jackson R., to ABC Extrusion Company. Display signs. 4,265,039, Cl. 40-603.000.

Brown Oil Tools, Inc.: *See—*
Baugh, Benton F., 4,265,304, Cl. 166-77.000.

Brown, Sanford W.: *See—*
Pelser, Robert J.; Pelser, Lewis M.; Hill, Robert W.; Brown, Sanford W.; and Fischer, Robert G., 4,265,680, Cl. 148-103.000.

Brown, Vincent B.; and Kozel, Charles A., to Methode Electronics, Inc. Apparatus for driving pins into a printed circuit board and the like. 4,265,013, Cl. 29-739.000.

Brush, Charles K.; and Weinstock, Joseph, to SmithKline Corporation. 6-Lower alkyl-7,8-dihydroxy-1-phenyl-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,265,889, Cl. 424-244.000.

Buchmayer, Ludwig, to Wild Heerbrugg Aktiengesellschaft. Instrument stand. 4,265,421, Cl. 248-188.000.

Buck, Otto: *See—*
Morris, Winfred L.; Inman, Richard V.; and Buck, Otto, 4,265,120, Cl. 73-600.000.

Buck, Robert T.: *See—*
Abel, Kenneth; and Buck, Robert T., 4,265,760, Cl. 210-282.000.

Bucker, Fritz O.; and Lambrecht, Henning F. W. M. A., to Hermann Screens Manufacturing Company (Proprietary) Limited. Screen element. 4,265,742, Cl. 209-399.000.

Bucy, Raymond W., Jr.; Gallardo, Vicente C., Jr.; Hollett, Ronald C.; and Young, Eric A., to General Electric Company. Turbomachinery blade retaining assembly. 4,265,595, Cl. 416-220.00R.

Budzinski, John C., to Du Pont de Nemours, E. I., and Company. Process for preparing substituted pyridinyloxy ether intermediate. 4,266,063, Cl. 546-302.000.

Buehl, Arnold L.: *See—*
Pardue, Ray L.; and Buehl, Arnold L., 4,266,117, Cl. 219-343.000.

Buescher, Theodore H. Flower pot with controlled moisture. 4,265,050, Cl. 47-79.000.

Buhler, Marcel; Olofsson, Mats; and Fosseux, Pierre-Yves, to Societe d'Assistance Technique pour Produits Nestle S.A. Whey protein recovery. 4,265,924, Cl. 426-582.000.

Buhr, Gerhard; and Ruckert, Hans, to Hoechst Aktiengesellschaft. Light-sensitive mixture. 4,266,001, Cl. 430-192.000.

Builders Concrete, Inc.: *See*—
Sluys, Wesley W., 4,265,193, Cl. 114-267.000.
Burford, Billy R., to Portec, Inc. Variable follower rest for a lathe. 4,265,150, Cl. 82-17.000.
Burgdorf, Jochen, to ITT Industries, Inc. Pressure control valve for a vehicle hydraulic brake system. 4,265,490, Cl. 303-6.00C.
Burke, Courtney L., to Eisner, Albert M., a part interest. Synthetic fuel formulation and process for producing the same. 4,265,638, Cl. 44-56.000.
Burkhardt, Gottfried. Dual pitch carriage drive mechanism. 4,265,555, Cl. 400-320.000.
Burkhart, Gerald W., to Arco Polymers, Inc. Lightweight frothed gypsum structural units. 4,265,964, Cl. 428-306.000.
Burlington Industries, Inc.: *See*—
May, Robert E., 4,265,962, Cl. 428-287.000.
Burnett, Bradley W.; and Fish, Leonard A. Display panel interface circuit. 4,266,225, Cl. 340-799.000.
Burniski, Edward W. Automatic self-leveling instrument mount. 4,265,027, Cl. 33-291.000.
Burns, Edgar, to International Telephone and Telegraph Corporation. Contact retention assembly. 4,265,504, Cl. 339-97.00R.
Burns, Richard D.; and Wesseldyk, Albert J., to General Electric Company. Take-up apparatus for electrical phase insulator fabricating equipment. 4,265,413, Cl. 242-75.300.
Burroughs Corporation: *See*—
McMillan, Andrew H.; and Chambors, John M., 4,265,446, Cl. 271-305.000.
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; and Baran, Joseph, 4,265,469, Cl. 283-8.00B.
Busse, Oswald; and Klesper, Hugo, to Passavant-Werke Michelbacher Huette. Apparatus for conveying and dewatering wet coarse screenings debris. 4,265,171, Cl. 100-118.000.
Busse, Oswald; and Klesper, Hugo, to Passavant-Werke Michelbacher Huette. Chamber filter press. 4,265,749, Cl. 210-138.000.
Butler, Louis; and Ogden, Paul H., to Minnesota Mining and Manufacturing Company. Light sensitive materials with fluorinated polymer antistats. 4,266,015, Cl. 430-527.000.
Byrne, Geoffry A.; and Aylott, Ross I., to Inveresk Research International. Controlled release suppositories. 4,265,875, Cl. 424-19.000.
C. E. Equipment Co., Inc.: *See*—
Tatum, Joe F., 4,265,725, Cl. 204-196.000.
C. L. Frost & Son, Inc.: *See*—
Van Der Meulen, Douglas J.; and Weis, Siegfried K., 4,265,133, Cl. 74-194.000.
C. Plath KG: *See*—
Hallbauer, Hans-Dieter; Gast, Fritz G. H.; Hoenow, Klaus-Werner; and Rahn, Armin, 4,265,109, Cl. 73-862.230.
Caille, Charles: *See*—
Baumann, Heinz; and Caille, Charles, 4,265,277, Cl. 139-1.00R.
Cain, Donald E.; and Gutman, Nathan, to Caterpillar Tractor Co. Governor control having dual power settings. 4,265,203, Cl. 123-367.000.
Caines, Ronald S., to Dow Chemical Company, The. Vermicular expanded graphite composite material. 4,265,952, Cl. 428-36.000.
Cala, Francis R.: *See*—
Winston, Anthony E.; Cala, Francis R.; Lengyel, Stephen P.; Kirschner, Lawrence; and Bracilovic, Dragomir, 4,265,790, Cl. 252-532.000.
Calhoun Yarn Services, Inc.: *See*—
Freeman, Danny M.; Knight, Milton M., Jr.; Payton, Clarence M.; Simpson, Robert S.; and Smith, Howard B., Jr., 4,264,993, Cl. 8-149.000.
Calve, Louis: *See*—
Shen, Kuo-Cheng; Fung, David P. C.; and Calve, Louis, 4,265,846, Cl. 264-109.000.
Cambridge Analyzing Instruments Ltd.: *See*—
Ware, Rowland M., 4,265,661, Cl. 75-135.000.
Cameron Iron Works, Inc.: *See*—
Danner, Bailey L., 4,265,470, Cl. 285-39.000.
Jones, Marvin R., 4,265,424, Cl. 251-1.00A.
Cameron, Mable R. Composition and process for treating uterine prolapse. 4,265,883, Cl. 424-154.000.
Campbell, Malcolm D., to Commonwealth Scientific and Industrial Research Organization. Impact-resisting composites. 4,265,981, Cl. 428-591.000.
Campbell, Michael F.; Fiala, Richard J.; Wideman, James D.; and Rasche, John F., to A. E. Staley Manufacturing Company. Bland vegetable protein product and method of manufacture. 4,265,925, Cl. 426-641.000.
Campbell, Robert A. Distance measuring instrument. 4,265,021, Cl. 33-143.00R.
Camras, Marvin, to IIT Research Institute. Capstan drive system for driving tape record media, and having internally mounted transducer head means. 4,266,255, Cl. 360-90.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense: *See*—
Cornish, William D., 4,266,208, Cl. 333-218.000.
Canadian General Electric Company Limited: *See*—
Dick, David C., 4,265,325, Cl. 175-410.000.
Canadian Patents and Development Limited: *See*—
Shen, Kuo-Cheng; Fung, David P. C.; and Calve, Louis, 4,265,846, Cl. 264-109.000.
Candor, James T. Method of making electret means. 4,266,088, Cl. 136-206.000.
Cannon, Thomas B.; Dalley, James E.; and George, Andrew S., to Bell Telephone Laboratories, Incorporated. Device control system. 4,266,097, Cl. 179-2.00A.
Canon Kabushiki Kaisha: *See*—
Hasegawa, Tetsuo; Kato, Shigeo; and Miyashita, Takeshi, 4,265,994, Cl. 430-107.000.
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,265,991, Cl. 430-64.000.
Matsumoto, Kazuya; Matsumura, Susumu; Nose, Noriyuki; and Okuno, Youichi, 4,265,522, Cl. 354-53.000.
Matsumura, Isao, 4,265,518, Cl. 351-7.000.
Ohara, Katsunobu; and Yoshida, Nobutoshi, 4,265,531, Cl. 355-3.0SC.
Shinohara, Yukimasa; and Ichihashi, Hiroo, 4,265,198, Cl. 118-695.000.
Toyono, Tsutomu; Nakamura, Shunji; Kanbe, Junichiro; Tamura, Yasuyuki; and Takahashi, Tohru, 4,265,197, Cl. 118-657.000.
Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,265,521, Cl. 354-23.00D.
Yokota, Hideo, 4,265,529, Cl. 354-224.000.
Capel, Denis, to Johnson Controls, Inc. Switch mechanism with independent toggle actuators. 4,266,104, Cl. 200-18.000.
Cappel, Klaus L., to Wyle Laboratories. Motion limiting apparatus. 4,265,123, Cl. 73-663.000.
Carbone, Giovanni M. Articulated flippers for hands and feet, with a surface variable during swimming. 4,264,994, Cl. 9-309.000.
Card-O-Matic Pty. Limited: *See*—
Stanley, Louis; and Sinclair, Robert E., 4,266,102, Cl. 179-90.0CS.
Carl Hurth Maschinen-und Zahnradfabrik: *See*—
Eichinger, Johann, 4,265,625, Cl. 440-53.000.
Erhardt, Manfred; and Stoeckl, Max, 4,265,575, Cl. 409-8.000.
Carl Still, Firma: *See*—
Bocsanczy, Janos; Offermann, Ludwig; and Stalherm, Dieter, 4,265,709, Cl. 201-4.000.
Carle, Udo: *See*—
Vural, Gulertan; Carle, Udo; and Lenkeit, Manfred, 4,265,130, Cl. 74-87.000.
Carlini, Gerardo P. V. Centrifugal fan. 4,265,592, Cl. 415-157.000.
Carosi, Franco; and Reggiani, Tito, to Voxson S.p.A. Systems for the handling and distributing of data. 4,266,284, Cl. 365-189.000.
Carroll, David W.: *See*—
McCreary, William J.; and Carroll, David W., 4,265,982, Cl. 428-608.000.
Carruth, Grant F.; Coffey, Fred S.; and Fulmer, Ray M., to Owens-Corning Fiberglas Corporation. Apparatus for removing long strands from chopped strand material. 4,265,151, Cl. 83-102.000.
Carson, William W.; and Rolfe, Norman F., to Waters Associates, Inc. Electrical zeroing of light beam. 4,265,536, Cl. 356-130.000.
Cartwright, Cyril A.; and Peleckis, Anthony J., Jr., to Warner-Lambert Company. Method and apparatus for forming a razor blade edge. 4,265,055, Cl. 51-80.00B.
Cassella Aktiengesellschaft: *See*—
Ribka, Joachim; Tappe, Horst; Roth, Kurt; and Weyer, Hans-Jurgen, 4,265,629, Cl. 8-449.000.
Cassimally, Khalil A. I. Incision closing method. 4,265,226, Cl. 128-1.00R.
Cassinelli, Giuseppe: *See*—
Bargiotti, Alberto; Cassinelli, Giuseppe; Arcamone, Federico; and DiMarco, Aurelio, 4,265,885, Cl. 424-180.000.
Caswell, Bruce F., to Arcanum Corporation. Preparation of dicalcium phosphate. 4,265,867, Cl. 423-309.000.
Caterpillar Mitsubishi Ltd.: *See*—
Sato, Takayuki, 4,265,138, Cl. 74-481.000.
Caterpillar Tractor Co.: *See*—
Cain, Donald E.; and Gutman, Nathan, 4,265,203, Cl. 123-367.000.
Engel, William K.; and Miller, Dean E., 4,265,165, Cl. 91-490.000.
Fee, David M., 4,265,316, Cl. 169-19.000.
Livesay, Richard E., 4,265,084, Cl. 59-7.000.
Logemann, Larry R., 4,265,139, Cl. 74-485.000.
Muller, Thomas P., 4,265,063, Cl. 52-115.000.
Ostrowski, Richard C., 4,265,296, Cl. 164-165.000.
Peterson, Wayne A., 4,265,273, Cl. 137-625.680.
Cavanagh, Eduardo: *See*—
Cook, Billy D.; and Cavanagh, Eduardo, 4,265,122, Cl. 73-627.000.
CBS Inc.: *See*—
Bauer, Benjamin B., 4,266,093, Cl. 179-1.0GQ.
Ceccarelli, Pietro: *See*—
Berton, Marcello; and Ceccarelli, Pietro, 4,265,500, Cl. 312-107.000.
Celanese Corporation: *See*—
Choe, Eui W., 4,265,802, Cl. 260-40.00P.
Nowak, Michael T., 4,265,976, Cl. 428-486.000.
Yates, Derek N.; and Presta, John C., 4,265,951, Cl. 428-36.000.
Centronics Data Computer Corp.: *See*—
Cote, Henry L., 4,265,549, Cl. 400-124.000.
Chai, Soo Young; Sautter, Helmuth O.; and Sherbon, Wallace E., to Bell Telephone Laboratories, Incorporated. Digital encoder for facsimile transmission. 4,266,249, Cl. 358-260.000.
Chalk, Alan J.; and Magennis, Steven A., to Givaudan Corporation. Process for preparing a myrcenol, cis-ocimenol mixture substantially free of trans-ocimenol. 4,266,087, Cl. 568-875.000.
Chambors, John M.: *See*—
McMillan, Andrew H.; and Chambors, John M., 4,265,446, Cl. 271-305.000.

Chamoff, Martin E.; Miller, Irving L.; and Thorson, Donald L. Reconfigurable cluster of data-entry terminals. 4,266,271, Cl. 364-200.000.

Champion International Corporation: *See*—
Faller, Rudolph A.; and Tolaas, William M., 4,265,390, Cl. 229-30.000.
Schillinger, Joseph F.; and Nielsen, Arthur R., 4,265,366, Cl. 221-33.000.

Chan, Ka-Kong; and Pawson, Beverly A., to Hoffmann-La Roche Inc. Fluorinated aromatic polyenes. 4,266,073, Cl. 560-55.000.

Chancler, Francis X., to Rohm and Haas Company. Polyurethane foam articles coated with a crushed foam and method of producing. 4,265,965, Cl. 428-315.000.

Chang, Cherng. Mass spectrometer for chemical ionization and electron impact ionization operation. 4,266,127, Cl. 250-288.000.

Chang, Clarence D.: *See*—
Audeh, Costandi A.; Chang, Clarence D.; and Lang, William H., 4,265,735, Cl. 208-234.000.

Charles Stark Draper Laboratory, Inc., The: *See*—
Fulton, Donald E., 4,266,176, Cl. 318-801.000.

Charlesworth, Frank D. W.; Dover, William D.; and Taylor, Kenneth A., to Dover & Partners Limited. Probes and apparatus for and methods of measuring crack depths. 4,266,185, Cl. 324-64.000.

Chattem Inc.: *See*—
Pratt, Charles E., 4,265,975, Cl. 428-480.000.

Chemie Linz Aktiengesellschaft: *See*—
Saischek, Gerald; Wegleitner, Karlheinz; Heu, Ferdinand; and Wohlmuth, Roman, 4,265,664, Cl. 106-18.130.

Chemische Werke Huls Aktiengesellschaft: *See*—
Grundmann, Raban; and Maahs, Gunther, 4,265,806, Cl. 260-45.8NT.

Chen, Sow-Mei L.: *See*—
Grudzinskas, Charles V.; Wissner, Allan; and Chen, Sow-Mei L., 4,265,904, Cl. 424-285.000.

Cheng, Dah Y., to International Power Technology, Inc. Method and apparatus for distillation. 4,265,713, Cl. 203-10.000.

Cheng, Lung; and Cross, Warren G., to United States of America, Interior. Portable airborne droplet impactor sampler and method. 4,265,107, Cl. 73-28.000.

Chenot, Charles F., to GTE Products Corporation. Strontium-calcium fluorapatite phosphors and fluorescent lamp containing the same. 4,266,160, Cl. 313-486.000.

Chenot, Charles F.: *See*—
Kasenga, Anthony F.; and Chenot, Charles F., 4,266,161, Cl. 313-487.000.

Chermann, Jean-Claude: *See*—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,266,060, Cl. 546-64.000.

Cherry Semiconductor Corporation: *See*—
Kardash, John J., 4,266,218, Cl. 340-628.000.

Chevron Research Company: *See*—
deVries, Louis; and King, John M., 4,265,773, Cl. 252-46.400.
Singer, Malcolm S., 4,266,033, Cl. 435-252.000.

Chicago Pneumatic Tool Company: *See*—
Wallace, William K.; and Giardino, David A., 4,265,108, Cl. 73-862.210.
Wallace, William K.; and Giardino, David A., 4,265,265, Cl. 137-56.000.

Chiron, Bernard; Foure, Jean-Louis; and de Vecchis, Michel, to Societe Lignes Telegraphiques et Telephoniques. Optoelectronic converting termination for optical-fibre transmission cable. 4,265,512, Cl. 350-96.200.

Chisholm, William M., to Western Electric Company, Inc. Intermediate-web held terminal pins. 4,265,508, Cl. 339-221.00R.

Chiu, Kh: *See*—
Hobrecht, Stephen W.; Skawinski, Henry M.; Chiu, Kh; and Hee, Wong, 4,266,254, Cl. 360-62.000.

Chiu, Tony T.; Wright, Bruce M.; Strasser, Jurgen H.; and Harper, Bruce M., to FMC Corporation. Steam table tray spacing apparatus. 4,265,168, Cl. 99-448.000.

Chiyoda, Tsuneyuki; and Ohtani, Masami, to Diesel Kiki Co., Ltd. Refrigerant compressor for air conditioning of vehicles. 4,265,603, Cl. 418-2.000.

Choe, Eui W., to Celanese Corporation. Polyester of para-hydroxy benzoic acid, 1,4-bis(para-carboxyphenoxy) benzene, aromatic diol and aromatic diacid capable of undergoing melt processing. 4,265,802, Cl. 260-40.00P.

Choi, Dai S.; and von Schonfeldt, Hilmar A., to Conoco, Inc. Mine roof control. 4,265,570, Cl. 405-258.000.

Chong, Berni P.: *See*—
Beasley, Glenn H.; Chong, Berni P.; Ford, Warren T.; and Neely, James W., 4,265,768, Cl. 210-682.000.

Chou, Nelson S.: *See*—
Skoch, Leroy V.; Harmon, Bud G.; Dickerson, Charles W.; and Chou, Nelson S., 4,265,916, Cl. 426-74.000.

Chow, Philip Y.: *See*—
Lin, Tung-Yen; Yang, Yue-Chyou; and Chow, Philip Y., 4,265,066, Cl. 52-224.000.

Christensen, Inc.: *See*—
Juergens, Rainer, 4,265,323, Cl. 175-107.000.

Christopherson, Phillips; and Aelion, Rene, to Polymer Cencentrates, Inc. Conductive polymer processable as a thermoplastic. 4,265,789, Cl. 252-511.000.

Chubbuck, John G.; and Turner, James T., to Johns Hopkins University, The. Intracranial pressure implant. 4,265,252, Cl. 128-748.000.

Chuiton, Rene; and MacLeod, Patrick, to Commissariat a l'Energie Atomique. Differential olfactometer. 4,265,248, Cl. 128-630.000.

Church & Dwight Co., Inc.: *See*—
Winston, Anthony E.; Cala, Francis R.; Lengyel, Stephen P.; Kirschner, Lawrence; and Bracilovic, Dragomir, 4,265,790, Cl. 252-532.000.

Churilov, Lev D.: *See*—
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.

Ciba-Geigy AG: *See*—
Bauerle, Rolf, 4,265,630, Cl. 8-456.000.
Jan, Gerald, 4,266,011, Cl. 430-392.000.
Tzikas, Athanassios, 4,265,633, Cl. 8-650.000.

Ciba-Geigy Corporation: *See*—
Becker, Carl, 4,265,631, Cl. 8-471.000.
Dingwall, John G.; Cook, Barry; and Marshall, Alan, 4,265,769, Cl. 210-699.000.
Falk, Robert A.; and Mueller, Karl F., 4,266,080, Cl. 568-45.000.
Farooq, Saleem, 4,265,655, Cl. 71-90.000.
Grieder, Alfred; and Coers, Klaus-Jurgen, 4,266,071, Cl. 560-43.000.
Gsell, Laurenz; Ackermann, Peter; and Wehrli, Rudolf, 4,265,897, Cl. 424-269.000.
Kocsis, Karoly; Peter, Heinrich; and Bickel, Hans, 4,265,892, Cl. 424-246.000.

Ciments Lafarge France: *See*—
Falinower, Charles, 4,265,856, Cl. 422-68.000.

Ciolkevich, John T., to Park-Ohio Industries, Inc. Floating valve seat inductor. 4,266,109, Cl. 219-10.570.

Citadel Management Services, Inc.: *See*—
Angermann, Manfred E., 4,265,006, Cl. 27-14.000.

Citizen Watch Co., Ltd.: *See*—
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,266,278, Cl. 364-705.000.
Kizaki, Shigeru, 4,266,156, Cl. 310-344.000.

Clancy, Douglas E.; Johnson, Carl F.; McCray, William R.; and Neal, Danny M., to International Business Machines Corporation. Paragraph indent. 4,265,554, Cl. 400-316.000.

Clark, Brian C., to Allis-Chalmers Corporation. Detent release for power shift transmission selector valve. 4,265,144, Cl. 74-752.00C.

Clark, James W., to Envirotech Corporation. Quick-coupling locking mechanism. 4,265,587, Cl. 414-723.000.

Clarke, Stephen E., to General Motors Corporation. Electro-viscous fan clutch with snap action spring valve element for control of fluid gate. 4,265,348, Cl. 192-58.00B.

Cleary, James G.; and Zymboly, Gregory E., to Wyoming Mineral Corporation. Method of reducing radioactive waste and of recovering uranium from it. 4,265,861, Cl. 423-10.000.

Close, James R., to Minnesota Mining and Manufacturing Company. Intumescent stressed skin composite material. 4,265,953, Cl. 428-78.000.

Coates, Clarence A., Jr.: *See*—
Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., 4,265,812, Cl. 260-158.000.

Cobe Laboratories, Inc.: *See*—
Giurtino, Joel F.; and Anderson, Robert L., 4,265,303, Cl. 165-166.000.

Coers, Klaus-Jurgen: *See*—
Grieder, Alfred; and Coers, Klaus-Jurgen, 4,266,071, Cl. 560-43.000.

Coffey, Fred S.: *See*—
Carruth, Grant F.; Coffey, Fred S.; and Fulmer, Ray M., 4,265,151, Cl. 83-102.000.

Cohen, Milton J. Filter device for injectable fluid. 4,265,242, Cl. 128-272.000.

Cohnen, Erich, to Beiersdorf Aktiengesellschaft. Aryl-substituted furnaces. 4,265,903, Cl. 424-282.000.

Colgate-Palmolive Company: *See*—
Gross, William S.; Gibbons, Edward J.; and Wraga, Joseph B., 4,265,781, Cl. 252-174.000.
Sonenstein, Gerard G., 4,265,778, Cl. 252-117.000.

Colijn, Johannes J. V., to Breveteam S.A. Synthetic net material. 4,265,956, Cl. 428-134.000.

Collin, Reimer; Diehr, Hans-Joachim; and Friesnitz, Uwe, to Bayer Aktiengesellschaft. Preparation of 4-fluoro-3-phenoxy-toluene. 4,266,082, Cl. 568-639.000.

Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., to Glaxo Group Limited. Prostanoid compounds and compositions. 4,265,891, Cl. 424-244.000.

Collins, Walter W., to Jenkins Metal Corporation. Pocket knife with retractable blade. 4,265,017, Cl. 30-162.000.

Colonia Management-und Beratungsgesellschaft mbH & Co., K.G.: *See*—
Fricke, Jobst; Voigt, Wolfgang; and Schmitz, Jurgen, 4,265,157, Cl. 84-1.190.

Columbus McKinnon Corporation: *See*—
Schreyer, Kenneth D.; Leverentz, Earl T.; Nusz, Thomas R.; and Benton, Reuben P., 4,265,181, Cl. 105-150.000.

Combustion Engineering, Inc.: *See*—
Barger, John J., 4,266,110, Cl. 219-73.210.
Lawrence, Frederick D., 4,265,708, Cl. 176-78.000.

Pomroy, Michael F., 4,265,068, Cl. 52-456.000.

Comiskey, Frederick K.: *See—*
Fraser, Daniel M.; Hausner, John E.; Hawkins, William J.; and Comiskey, Frederick K., 4,266,106, Cl. 200-61.440.

Comiskey, Gary F.: *See—*
Karlin, Richard A.; McDonald, Robert W.; and Comiskey, Gary F., 4,266,189, Cl. 324-117.00H.

Commander Board International, Inc.: *See—*
Edwards, Lindell N., 4,265,041, Cl. 40-620.000.

Commissariat a l'Energie Atomique: *See—*
Bourdois, Claude; Decolle, Maurice; Ferard, Michel; and Marchal, Paul, 4,265,572, Cl. 406-114.000.
Chuiton, Rene; and MacLeod, Patrick, 4,265,248, Cl. 128-630.000.
Contre, Michel; Martin, Philippe; and Quetier, Monique, 4,265,666, Cl. 106-43.000.

Commons, Thomas J.: *See—*
Sheehan, John C.; and Commons, Thomas J., 4,265,882, Cl. 424-114.000.

Commonwealth Scientific and Industrial Research Organization: *See—*
Campbell, Malcolm D., 4,265,981, Cl. 428-591.000.

Compagnie des Transmissions Mecaniques Sedis: *See—*
Dupoyet, Guy J. M., 4,265,134, Cl. 474-231.000.

Compagnie Generale d'Electricite: *See—*
Gaffard, Jean-Paul, 4,265,539, Cl. 356-345.000.

Compagnie Generale des Etablissements Michelin: *See—*
Pommier, Jean, 4,265,289, Cl. 152-209.00A.
Pommier, Jean, 4,265,291, Cl. 152-352.00R.

Compagnie Geofinanciere: *See—*
Issenmann, Olivier, 4,266,277, Cl. 364-498.000.

Compagnie Internationale Pour l'Informatique CII-Honeywell Bull: *See—*
Richard, Andre, 4,266,286, Cl. 365-205.000.

Compton, Bertram L.; and Pierson, Paul B., to RCA Corporation. Optical scanner with variable scan line angle. 4,265,524, Cl. 354-65.000.

Computervision Corporation: *See—*
Snow, Kenneth A., 4,265,542, Cl. 356-356.000.

Conn Chem Group, Limited: *See—*
Suk, Albert, 4,265,797, Cl. 260-29.60E.

Conn, John L. Container with drinking tube. 4,265,363, Cl. 215-229.000.

Conoco, Inc.: *See—*
Anderson, Ardis L., 4,265,637, Cl. 44-51.000.
Choi, Dai S.; and von Schonfeldt, Hilmar A., 4,265,570, Cl. 405-258.000.
Sifferman, Thomas R., 4,265,264, Cl. 137-13.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Naphthalenetetrayletrakis(sulfonylimino)-aryl disulfonic acids and salts thereof. 4,265,830, Cl. 260-510.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. s-Phenenyltris(sulfonylimino)tri-benzene mono- and disulfonic acids and salts complement inhibitors. 4,265,908, Cl. 424-315.000.

Conrow, Ransom B.; and Bernstein, Seymour, to American Cyanamid Company. Naphthalenetetrayltetrakis(sulfonylimino)-aryl multicarboxylic acids and salts thereof. 4,266,077, Cl. 562-427.000.

Consolidated Medical Equipment Inc.: *See—*
Abraham, William W., 4,265,253, Cl. 128-798.000.

Continental Oil Company: *See—*
Britton, Michael W.; Martin, William L.; McDaniel, Jack D.; and Wahl, Harry A., 4,265,310, Cl. 166-259.000.

Contre, Michel; Martin, Philippe; and Quetier, Monique, to Commissariat a l'Energie Atomique. Boron carbide La, Sr and/or Ba hexaboride ceramic material for a low temperature direct heating electric gun cathode. 4,265,666, Cl. 106-43.000.

Cook, Barry: *See—*
Dingwall, John G.; Cook, Barry; and Marshall, Alan, 4,265,769, Cl. 210-699.000.

Cook, Billy D.; and Cavanagh, Eduardo, to University of Houston. Nondestructive testing apparatus and method utilizing time-domain ramp signals. 4,265,122, Cl. 73-627.000.

Cook, Lacy G., to Hughes Aircraft Company. Three mirror anastigmatic optical system. 4,265,510, Cl. 350-55.000.

Cooper, David J.: *See—*
Gandolfo, Daniel; and Cooper, David J., 4,265,779, Cl. 252-135.000.

Cooper, John: *See—*
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., 4,265,406, Cl. 241-16.000.

Cooper, Kenneth W.: *See—*
Sumner, Lee E., Jr.; Cooper, Kenneth W.; and Abendschein, Frederic H., 4,265,298, Cl. 165-2.000.

Coors Porcelain Company: *See—*
Starling, Lynn B.; Stephan, James E.; and Stroud, Robert D., 4,265,669, Cl. 106-73.400.

Copa, William M.; and Gitchel, Wayne B., to Sterling Drug Inc. Disinfection and purification of fluids using focused laser radiation. 4,265,747, Cl. 210-758.000.

Corbeels, Roger J.: *See—*
Kessler, Richard V.; and Corbeels, Roger J., 4,265,407, Cl. 241-21.000.

Cormier, Raymond G.; and Allen, Walter C., to Nashua Corporation. Cassette locking and alignment assembly. 4,265,442, Cl. 271-127.000.

Cornell, Charles R.: *See—*
Klimowicz, Michael A.; and Cornell, Charles R., 4,265,272, Cl. 137-625.620.

Cornell Research Foundation, Inc.: *See—*
Nelson, David A., Jr.; and Ruoff, Arthur L., 4,266,138, Cl. 250-492.00A.

Corning Glass Works: *See—*
Stookey, Stanley D., 4,266,012, Cl. 430-396.000.

Cornish, William D., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defense. Broadband microwave frequency divider for division by numbers greater than two. 4,266,208, Cl. 333-218.000.

Corradi, Gabriel, to Astin France Assistance Technique Industrielle. Apparatus for longitudinally and transversely cutting strip material. 4,265,152, Cl. 83-106.000.

Cote, Henry L., to Centronics Data Computer Corp. Flat flexible printed circuit cable for a print head. 4,265,549, Cl. 400-124.000.

Coulon, Michel; and Laprade, Gerard, to Essilor International Cie Generale d'Optique. Process and apparatus for the production of spectacle frame parts of synthetic material. 4,265,850, Cl. 264-225.000.

Coulter Systems Corporation: *See—*
Lawson, Terence M., 4,265,987, Cl. 430-49.000.

Couture, Jacques. Lift assembly. 4,265,586, Cl. 414-545.000.

Covic, John: *See—*
Kuwik, John J.; Braden, Arthur B.; Taylor, Samuel K.; and Covic, John, 4,266,135, Cl. 250-445.00T.

Covington, Joseph C. Snow chain. 4,265,399, Cl. 238-14.000.

Cox, Arthur; Thiel, John A.; and Nodov, Eugene, to Mead Corporation, The. Lens system for document scanning. 4,266,252, Cl. 358-293.000.

Cox, Clayton E. Metal cornerboard for pallets. 4,265,184, Cl. 108-55.100.

Cox, Jon N.; and Singh, Balbir, to Scott Paper Company. Web rewinder turret swing control. 4,265,409, Cl. 242-56.00A.

CPS Industries: *See—*
Stone, Arnold F.; and Kinnard, William D., 4,265,692, Cl. 156-180.000.

Crain, Stephen F.: *See—*
Kierbow, Gerald C.; Tomlinson, Harvard L.; Horinek, Herbert J.; and Crain, Stephen F., 4,265,266, Cl. 137-101.190.

Crawford, Juan H., to AccuRay Corporation. Fluid system and method. 4,266,142, Cl. 250-572.000.

Creus, Rufino, to Spurmach Espana S. L. Driven spinning ring device for yarn spinning and twisting machines. 4,265,081, Cl. 57-75.000.

Cribbs, Robert W., to Litton Industrial Products, Inc. High resolution ultrasound diagnostic apparatus. 4,265,121, Cl. 73-607.000.

Cross, Warren G.: *See—*
Cheng, Lung; and Cross, Warren G., 4,265,107, Cl. 73-28.000.

Crosslen, Louis J., to Frank Mayer & Associates, Inc. Display assembly having overlapping and removable sample holders. 4,265,038, Cl. 40-124.200.

Crossley, Leonard S. Chicken marinade draining system. 4,265,766, Cl. 210-455.000.

Crown Controls Corporation: *See—*
Dammeyer, Ned E., 4,265,337, Cl. 187-9.00E.

Crown Zellerbach Corporation: *See—*
Reba, Imants, 4,265,573, Cl. 406-152.000.

Crum, Gerald W.; and Macartney, Lawrence J., to Nordson Corporation. Metering and mixing apparatus for multiple component. 4,265,858, Cl. 422-129.000.

Crum, Louis J.: *See—*
Thoma, Paul E.; Crum, Louis J.; and Frias, Ronald J., 4,265,117, Cl. 73-359.00R.

Cubic Corporation: *See—*
McNaul, William F.; and Eberhardt, Paul R., 4,266,226, Cl. 343-100.0LE.

Curry, Earle. Space heater. 4,265,215, Cl. 126-77.000.

Curtiss, Walter W., Jr.; and O'Flanagan, Patrick T., to Goodyear Tire & Rubber Company, The. Closed tube simplified radial tire, tire/rim assembly and method of making same. 4,265,293, Cl. 152-354.00R.

Cutter Laboratories, Inc.: *See—*
Morin, Marius J., 4,265,425, Cl. 251-9.000.

Cyphelly, Ivan J. Flow control device for use with positive displacement pump. 4,265,267, Cl. 137-117.000.

D. W. Zimmerman Mfg., Inc.: *See—*
Fox, Albert D., 4,265,147, Cl. 81-55.000.

Daane, Robert A., to W. R. Grace & Co. Air bar having asymmetrical inlet. 4,265,384, Cl. 226-97.000.

Dakin, Thomas W.: *See—*
Mandelcorn, Lyon; Dakin, Thomas W.; and Mercier, George E., 4,266,264, Cl. 361-318.000.

Dakss, Mark L.: *See—*
Wellington, Charles K.; Dakss, Mark L.; and Benasutti, John E., 4,265,514, Cl. 350-96.210.

Dale, Bruce E.: *See—*
Tsao, George T.; Dale, Bruce E.; and Ladisch, Michael R., 4,265,675, Cl. 127-37.000.

Dalley, James E.: *See—*
Cannon, Thomas B.; Dalley, James E.; and George, Andrew S., 4,266,097, Cl. 179-2.00A.

Dalton, Robert W. Flotation machines and components thereof. 4,265,739, Cl. 209-169.000.

Dammeyer, Ned E., to Crown Controls Corporation. Fork lift truck speed control dependent upon fork elevation. 4,265,337, Cl. 187-9.00E.

Daniels, R. Gary; Musa, Fuad H.; Wilder, William B., Jr.; Wiles, Michael F.; and Bennett, Thomas H., to Motorola, Inc. Microprocessor having plural internal data buses. 4,266,270, Cl. 364-200.000.

Dankert, Gerhard: *See—*
Doring, Fritz; Beck, Gunther; and Dankert, Gerhard, 4,266,059, Cl. 544-334.000.
Dannatt, Hugh St. L., to Pitney Bowes Inc. Hot roll fusing device. 4,266,115, Cl. 219-216.000.
Danner, Bailey L., to Cameron Iron Works, Inc. Tubular connector. 4,265,470, Cl. 285-39.000.
Dany, Franz-Josef: *See—*
Wortmann, Joachim; Rieb, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, 4,265,854, Cl. 422-40.000.
Dark, Robert O.: *See—*
Jack, Stanton E.; and Dark, Robert O., 4,265,938, Cl. 427-163.000.
Darragh, Kirk V.: *See—*
Arzoumanidis, Gregory G.; and Darragh, Kirk V., 4,265,866, Cl. 423-304.000.
Data Instruments, Inc.: *See—*
Weber, Daniel R.; and Webb, Raymond C., 4,266,124, Cl. 250-221.000.
Datapower, Inc.: *See—*
Handler, Howard, 4,266,165, Cl. 315-224.000.
Date, Sukeaki; and Ebato, Seigo, to Mitsubishi Paper Mills, Ltd. Antistatic layer for silver halide photographic materials. 4,266,016, Cl. 430-527.000.
Datwyler AG.Schweiz, Kabel-, Gummi- und Kunststoffwerke: *See—*
Berger, Ernst; and Herwegh, Norbert, 4,265,225, Cl. 126-445.000.
Daughton, John W.; Wilczek, Stephen P.; and Steiner, Edward L., to Xerox Corporation. Copy reproduction machine with controller self check system. 4,266,294, Cl. 371-24.000.
Daum, Adam; Fernex, Michel; and Wick, Alexander E., to Hoffmann-La Roche Inc. Diuretic compositions. 4,265,893, Cl. 424-246.000.
Davies, David O., to Rolls-Royce Limited. Cooling air supply arrangement for a gas turbine engine. 4,265,590, Cl. 415-110.000.
Davis, Allan C., to Meyercord Co., The. Cigarette tax stamp applying machine and method. 4,265,355, Cl. 198-427.000.
Davis, David L.: *See—*
Nelson, Alfred M.; and Davis, David L., 4,265,196, Cl. 118-50.000.
Davis, Lois T.: *See—*
Blair, James E.; and Davis, Lois T., 4,266,035, Cl. 435-253.000.
Dawson, Edward S. Air purifier. 4,265,643, Cl. 55-130.000.
Debus, Gerhard; Girg, Friedrich; and Knittel, Volker, to Hoechst Aktiengesellschaft. Additive for concrete or mortar and the use thereof. 4,265,674, Cl. 106-314.000.
Decolle, Maurice: *See—*
Bourdois, Claude; Decolle, Maurice; Ferard, Michel; and Marchal, Paul, 4,265,572, Cl. 406-114.000.
de Cooker, Mario G. R. T.; and Haemers, Anita G. W. G., to Stamicarbon, B.V. Process for preparing cyanuric acid. 4,266,052, Cl. 544-192.000.
de Cortanze, Andre. Frameless motorcycle. 4,265,329, Cl. 180-219.000.
Decorzant, Rene: *See—*
Naf, Ferdinand; and Decorzant, Rene, 4,266,075, Cl. 560-120.000.
Deere & Company: *See—*
Lange, Henry J., 4,265,464, Cl. 280-460.00A.
Peters, Loren W., 4,265,077, Cl. 56-14.600.
Deffendorfer Werft und Eisenbau: *See—*
Miserlis, Constantine D.; Luke, Albert G., Jr.; Laber, Walter; and Guetlhuber, Friedrich 4,265,223, Cl. 126-435.000.
Defuans, Jean-Louis, to Formaplex S.A. Underwater still camera. 4,265,523, Cl. 354-64.000.
Deitrich, William J., Sr., to DMI, Inc. Trailer bumper hitch. 4,265,465, Cl. 280-478.00A.
Delattre, Marcel; and Romagnolo, Gerard, to Eurotungstene. Tool for rasping. 4,265,007, Cl. 29-79.000.
De Leo, Richard V.; and Hagen, Floyd W., to Rosemount Inc. Pneumatic averager. 4,265,112, Cl. 73-180.000.
Deluca, Domenico: *See—*
Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pricca, Angelo, 4,265,785, Cl. 252-429.00B.
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., to Wisconsin Alumni Research Foundation. Process for preparing 1-hydroxylated vitamin D compounds from 5,6-trans-vitamin D compounds. 4,265,822, Cl. 260-397.200.
Demosthene, Claude G.; and Aspisi, Christian R., to Expansia. Process for the preparation of 2-isopropylamino pyrimidine. 4,266,057, Cl. 544-330.000.
Demosthene, Claude G.; and Aspisi, Christian R., to Societe d'Etudes de Produits Chimiques. Synthesis of 2-isopropylamino-pyrimidine. 4,266,058, Cl. 544-330.000.
Dental Essentials, Inc.: *See—*
Lucki, John L.; and Naha, Alan B., 4,265,619, Cl. 433-54.000.
Denton, Medona B.; Windsor, David L.; and Heine, David R., to United States of America, Navy. Dismountable inductively-coupled plasma torch apparatus. 4,266,113, Cl. 219-121.0PQ.
Depoorter, Henri: *See—*
Moelants, Felix J.; and Depoorter, Henri, 4,266,014, Cl. 430-522.000.
Desai, Mahendrakumar D.; and Henderson, Drew, to Trafalgar Industries Inc. Foodstuff vending apparatus employing improved solid-state type control apparatus. 4,265,371, Cl. 222-70.000.
DeSoto, Inc.: *See—*
Lin, Shiow-Ching, 4,266,040, Cl. 521-90.000.
Sekmakas, Kazys; and Shah, Raj, 4,265,795, Cl. 260-29.300.
Deutsche Babcock Aktiengesellschaft: *See—*
Oppenberg, Rolf, 4,265,613, Cl. 431-121.000.
Devanz, Francois M.: *See—*
Hons-Olivier, Jacques P.; Le Thanh, Tri; and Devanz, Francois M., 4,266,039, Cl. 521-85.000.
de Vecchis, Michel: *See—*
Chiron, Bernard; Foure, Jean-Louis; and de Vecchis, Michel, 4,265,512, Cl. 350-96.200.
Devine, Clifford W. Method and apparatus for testing insulators. 4,266,184, Cl. 324-54.000.
deVries, Louis; and King, John M., to Chevron Research Company. Process of preparing molybdenum complexes, the complexes so-produced and lubricants containing same. 4,265,773, Cl. 252-46.400.
De Winter, Walter F.: *See—*
Timmerman, Daniel M.; De Winter, Walter F.; and Van Hoof, Albert E., 4,266,044, Cl. 525-336.000.
Diamond Shamrock Corporation: *See—*
Baczek, Stanley K.; and McCain, G. Howard, 4,266,036, Cl. 521-26.000.
Suchanski, Mary R.; and Bishara, Jeries I., 4,265,728, Cl. 204-290.00F.
Dias, Francisco J.; Gupta, Ashok K.; Gyarmati, Erno; Kampel, Marian; Luhleich, Hartmut; Munzer, Rudolf; and Naoumidis, Aristidis, to Kernforschungsanlage Julich Gesellschaft mit berschrankter Haftung. Method of producing shaped silicon-carbide bodies. 4,265,843, Cl. 264-57.000.
Dick, David C., to Canadian General Electric Company Limited. Percussion rock bit. 4,265,325, Cl. 175-410.000.
Dickerson, Charles W.: *See—*
Skoch, Leroy V.; Harmon, Bud G.; Dickerson, Charles W.; and Chou, Nelson S., 4,265,916, Cl. 426-74.000.
Dickerson, Max R.: *See—*
Foster, Ronnie D.; and Dickerson, Max R., 4,266,219, Cl. 340-630.000.
Dickover, Wesley D.: *See—*
Amacher, Gene L.; and Dickover, Wesley D., 4,266,145, Cl. 307-200.00A.
Didier-Werke AG: *See—*
Eschner, Axel, 4,265,845, Cl. 264-63.000.
Diehr, Hans-Joachim: *See—*
Collin, Reimer; Diehr, Hans-Joachim; and Friesnitz, Uwe, 4,266,082, Cl. 568-639.000.
Diepenbrock, James L., Jr.: *See—*
Harp, Marlyn F.; Diepenbrock, James L., Jr.; and Nelsen, M. Dean, 4,265,955, Cl. 428-116.000.
Diesel Kiki Co., Ltd.: *See—*
Chiyoda, Tsuneyuki; and Ohtani, Masami, 4,265,603, Cl. 418-2.000.
Ohtani, Yoshio, 4,266,192, Cl. 324-168.000.
Sumikawa, Seizi; and Harada, Takesi, 4,265,395, Cl. 236-13.000.
DiGiulio, Adolph V.; and Bauer, Jack N., to Arco Polymers, Inc. Fire-retardant imide copolymers. 4,266,037, Cl. 521-82.000.
DiGiulio, Adolph V.; and Bauer, Jack N., to Arco Polymers, Inc. Rubber-modified fire-retardant imide copolymers. 4,266,038, Cl. 521-82.000.
DiMarco, Aurelio: *See—*
Bargiotti, Alberto; Cassinelli, Giuseppe; Arcamone, Federico; and DiMarco, Aurelio, 4,265,885, Cl. 424-180.000.
Di Marco, Bernard; and Kralik, Andrew J., to Gould Inc. Circuit breaker handle and lost motion connected shield. 4,266,209, Cl. 335-6.000.
Dingwall, John G.; Cook, Barry; and Marshall, Alan, to Ciba-Geigy Corporation. Method of treating aqueous systems with phosphonoadipic acids. 4,265,769, Cl. 210-699.000.
Dinulescu, Mircea, to Kinetics Technology Intl. B.V. Process and apparatus for endothermic reactions. 4,265,732, Cl. 208-106.000.
Dionex Corporation: *See—*
Pohl, Christopher A., 4,265,634, Cl. 23-230.00R.
Dischler, Helmut, to Novopress GmbH Pressen und Presswerkzeuge & Co. KG. Clutch mechanism for power driven hand tools. 4,265,347, Cl. 192-56.00R.
Ditsler, Erwin P., to Textron, Inc. Milling machine system. 4,265,576, Cl. 409-129.000.
DMI, Inc.: *See—*
Deitrich, William J., Sr., 4,265,465, Cl. 280-478.00A.
Dobler, Karl-Ulrich; Mura, Sigurd; and Kraft, Erhard, to International Standard Electric Corporation. System for controlling track-bound vehicles forming a train. 4,266,273, Cl. 364-426.000.
Dr. E. Fresenius Chemisch pharmazeutisch Industrie KG: *See—*
Schindler, Johannes G.; and Schael, Wilfried, 4,265,249, Cl. 128-635.000.
Dolberg, Vladimir I.; Yarovoi, Igor V.; and Dronin, Mikhail I. Device for automatically cutting off damaged branches of pneumatic and hydraulic systems. 4,265,269, Cl. 137-118.000.
Donachiue, James P. Air prefilter. 4,265,647, Cl. 55-315.000.
Donaldson Company, Inc.: *See—*
Brenholt, David L., 4,265,762, Cl. 210-321.100.
Donnis, Gian P.; and Borca, Giancarlo C., to Ing. C. Olivetti & C., S.p.A. Ink ribbon cartridge including a movable ribbon tensioning guide for a printing machine. 4,265,550, Cl. 400-196.100.
Doorakian, George A.; Duquette, Lawrence G.; and Arnett, John F., to Dow Chemical Company, The. Process for preparing tetrahydrocarbylphosphonium bicarbonate salts. 4,266,079, Cl. 568-11.000.
Doring, Fritz; Beck, Gunther; and Dankert, Gerhard, to Bayer Aktiengesellschaft. Process for the preparation of 2,4,5-trichloropyrimidine. 4,266,059, Cl. 544-334.000.
Dorsey, Robert J., to Wehr Corporation. Press for compressing refractory material and including a quick change mold box. 4,265,610, Cl. 425-411.000.

Doss, Glenn D.; and Nylund, Theodore W., to Westinghouse Electric Corp. Method and apparatus for adjusting the elevation of fuel rods in a nuclear reactor fuel assembly. 4,265,010, Cl. 29-402.010.
Douwe Egberts Koninklijke Tabaksfabriek, Koffiebranderijen en Theehandel B.V.: *See*—
Thijssen, Henricus A. C., 4,265,920, Cl. 426-384.000.
Dover Corporation: *See*—
Oberrecht, David A., 4,265,281, Cl. 141-392.000.
Dover & Partners Limited: *See*—
Charlesworth, Frank D. W.; Dover, William D.; and Taylor, Kenneth A., 4,266,185, Cl. 324-64.000.
Dover, William D.: *See*—
Charlesworth, Frank D. W.; Dover, William D.; and Taylor, Kenneth A., 4,266,185, Cl. 324-64.000.
Dow Chemical Company, The: *See*—
Au, Andrew T., 4,266,054, Cl. 544-215.000.
Caines, Ronald S., 4,265,952, Cl. 428-36.000.
Doorakian, George A.; Duquette, Lawrence G.; and Arnett, John F., 4,266,079, Cl. 568-11.000.
Ezzell, Bobby R.; Malone, Jacquelyn M.; and Sorenson, Marius W., 4,265,719, Cl. 204-98.000.
Havens, Carl B., 4,265,853, Cl. 264-519.000.
Hinze, Kenneth J., 4,265,783, Cl. 252-182.000.
McDonald, Charles J.; and Beaver, Robert H., 4,265,835, Cl. 564-204.000.
Owen, Peter W.; Harmon, Zita K.; and Tomalia, Donald A., 4,265,825, Cl. 260-401.000.
Wang, Samuel S. M., 4,265,912, Cl. 424-260.000.
Dow Corning Corporation: *See*—
Homan, Gary R.; and Lee, Chi-Long, 4,265,792, Cl. 260-18.00S.
Keil, Joseph W., 4,265,878, Cl. 424-68.000.
Dowell, Terrence P.: *See*—
Luce, Carl T.; Banks, Edwin L., Jr.; and Dowell, Terrence P., 4,265,498, Cl. 308-230.000.
Doyle, Walter M., to Laser Precision Corporation. Refractively scanned interferometer. 4,265,540, Cl. 356-346.000.
Dragerwerk Aktiengesellschaft: *See*—
Schwanbom, Erik; and Warnow, Detlef, 4,265,237, Cl. 128-204.240.
Drago, Gary A.; Mix, Arthur L., Jr.; and Ritchie, Robert T., to International Business Machines Corp. Ink jet with retractable electrode and secondary ink catcher. 4,266,231, Cl. 346-75.000.
Drake, Charles A.; and Bayer, Raymond M., to Leach Industries. Metal racketball rackets. 4,265,450, Cl. 273-73.00G.
Dravo Corporation: *See*—
Naruns, Laimons; Terry, Dennis W.; and Stellfox, Samuel K., 4,265,579, Cl. 414-138.000.
Dreher, Ernst; Stroezel, Reinhold; Spittler, Siegfried; and Wolf, Richard, to Robert Bosch GmbH. Rotary pneumatic tool with valve-closing pin actuated upon overspeed. 4,265,604, Cl. 418-43.000.
Dresser Industries, Inc.: *See*—
Greenlee, Donald R.; and Hyde, Bill J., 4,265,459, Cl. 277-212.00C.
Dronin, Mikhail I.: *See*—
Dolberg, Vladimir I.; Yarovoi, Igor V.; and Dronin, Mikhail I., 4,265,269, Cl. 137-118.000.
Du Pont Canada, Inc.: *See*—
Hetherington, Brian L., 4,265,616, Cl. 432-8.000.
Dubetz, Martin W.; and Bilge, Umit, to General Motors Corporation. Ultrasonic method of inspecting spot welds. 4,265,119, Cl. 73-588.000.
Ducret, Lucien C. Cable splitter. 4,265,016, Cl. 30-90.800.
Ducrocq, Claire: *See*—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,266,060, Cl. 546-64.000.
Duinker, Simon, to N. V. Optische Industrie "De Oude Delft". Tomography wherein signal profiles derived from an out-fanning beam of penetrating radiation can be reconstructed corresponding with parallel incident rays. 4,266,136, Cl. 250-445.00T.
Dummermuth, Ernst H.: *See*—
Struger, Odo J.; and Dummermuth, Ernst H., 4,266,281, Cl. 364-900.000.
Dunbar, Ronald C., to Siemens Corporation. Control circuit for a telephone system for the control of visual and audible signals. 4,266,101, Cl. 179-84.00C.
Dunlop Limited: *See*—
Jackson, William L., 4,265,290, Cl. 152-330.0RF.
Dunn, Garf L. Auxiliary hydraulic maneuvering system for small boats. 4,265,192, Cl. 114-151.000.
Du Pont de Nemours, E. I., and Company: *See*—
Bauman, Donald L.; and Toji, Masuo, 4,265,810, Cl. 260-141.000.
Budzinski, John C., 4,266,063, Cl. 546-302.000.
Kring, Elbert V., 4,265,635, Cl. 23-232.00R.
Dupoyet, Guy J. M., to Compagnie des Transmissions Mecaniques Sedis. Transmission chain. 4,265,134, Cl. 474-231.000.
Duquette, Lawrence G.: *See*—
Doorakian, George A.; Duquette, Lawrence G.; and Arnett, John F., 4,266,079, Cl. 568-11.000.
Duracell International Inc.: *See*—
Kaye, Gordon E., 4,265,984, Cl. 429-178.000.
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, to Smith Kline & French Laboratories Limited. Amidinosulphonic acid derivatives. 4,265,896, Cl. 424-263.000.
Durapipe Limited: *See*—
Nash, David D., 4,265,471, Cl. 285-111.000.
Durbin, Anthony T.; and Kennedy, Bruce A., to Gulf Oil Corporation; and Standard Oil Company. Apparatus for in-situ retorting. 4,265,486, Cl. 299-2.000.
Duro Dyne Corporation: *See*—
Hinden, Milton, 4,264,995, Cl. 10-1.00R.
Duwel, Edward C.: *See*—
Eckert, Alton B.; and Duwel, Edward C., 4,266,222, Cl. 340-679.000.
Duwell, Michael J.; and Specht, Paul B., to Heartland Chemicals. System for opening and emptying containers. 4,265,584, Cl. 414-412.000.
Dykes, Wiley V.: *See*—
Swiatosz, Edmund; Dykes, Wiley V.; Grimmer, Paul D.; and Lane, Bruce V., 4,265,238, Cl. 128-205.120.
Dynamit Nobel Aktiengesellschaft: *See*—
Kuhnel, Werner; and Spielau, Paul, 4,266,041, Cl. 521-92.000.
E. R. Squibb & Sons, Inc.: *See*—
Rovnyak, George C., 4,266,065, Cl. 548-379.000.
Varma, Ravi K., 4,265,815, Cl. 260-239.55R.
E-Z Fill Corporation: *See*—
O'Banion, John D., 4,265,752, Cl. 210-172.000.
Easter, Ross A.: *See*—
Anderson, George R.; Ott, Walter R.; Smoke, Edward J.; Easter, Ross A.; and Sholl, Jeffrey J., 4,266,108, Cl. 219-10.55E.
Eastern Associated Coal Corp.: *See*—
Hill, Alvin J., 4,265,353, Cl. 198-321.000.
Eastman Kodak Company: *See*—
Blair, Gerald E.; Merry, J. Bradford; and Wylot, James M., 4,265,517, Cl. 350-358.000.
Martin, Thomas W.; and Sandhu, M. Akram, 4,266,017, Cl. 430-533.000.
McCreary, Michael D.; Farley, William C.; and Erickson, Wayne F., 4,266,002, Cl. 430-218.000.
Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., 4,265,812, Cl. 260-158.000.
White, Weimar W.; and Kimble, Laurie A., 4,265,862, Cl. 423-21.100.
Zannucci, Joseph S.; and Wininger, John M., 4,265,804, Cl. 260-45.8NT.
Eaton Corp.: *See*—
Braun, Dennis H.; and Spink, Robert W., 4,266,175, Cl. 318-758.000.
Goscenski, Edward J., Jr.; and Konkle, Phillip E., 4,265,143, Cl. 74-710.500.
Klimowicz, Michael A.; and Cornell, Charles R., 4,265,272, Cl. 137-625.620.
Eaton, Melvin H., II. Dental floss. 4,265,258, Cl. 132-93.000.
Ebato, Seigo: *See*—
Date, Sukeaki; and Ebato, Seigo, 4,266,016, Cl. 430-527.000.
Eberhardt, Paul R.: *See*—
McNaul, William F.; and Eberhardt, Paul R., 4,266,226, Cl. 343-100.0LE.
Eberly, Paul E., Jr.; Mauldin, Charles H.; and Baird, William C., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,265,786, Cl. 252-439.000.
Ebert, Harry K., Jr.: *See*—
Boros, Victor B.; and Ebert, Harry K., Jr., 4,266,182, Cl. 323-267.000.
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, to Citizen Watch Co., Ltd. Portable electronic device equipped with calculation and timekeeping functions. 4,266,278, Cl. 364-705.000.
Ebitani, Atsushi; Inoue, Takehisa; and Tsunoi, Kazuo, to Toray Industries, Inc. Adsorbent for separating para-xylene, and process for the preparation thereof. 4,265,788, Cl. 252-455.00Z.
Eckert, Alton B.; and Duwel, Edward C., to Pitney Bowes Inc. Electronic postage meter having reset base warning. 4,266,222, Cl. 340-679.000.
Eckle, Otto, to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH. Combined boring and milling tool. 4,265,574, Cl. 408-188.000.
Ecodyne Corporation: *See*—
Lankenau, Henry G., 4,265,701, Cl. 159-47.0WL.
Econoray, Inc.: *See*—
Pardue, Ray L.; and Buehl, Arnold L., 4,266,117, Cl. 219-343.000.
Edwards, Lindell N., to Commander Board International, Inc. Indicia-supporting clip. 4,265,041, Cl. 40-620.000.
Edwards, Thomas M. Multi purpose carrier for vehicle. 4,265,382, Cl. 224-320.000.
Egami, Tsuneyuki: *See*—
Arao, Umeo; Egami, Tsuneyuki; Kosuda, Tooru; and Takeuchi, Yasuhiro, 4,265,163, Cl. 91-361.000.
Eggmann, Jean, to BBC Brown Boveri & Company Limited. Turbine blade having heat localization segments. 4,265,594, Cl. 416-193.00A.
Egli, Alwin. Apparatus for charging receptacles with items of like size and shape. 4,265,072, Cl. 53-501.000.
Eibeck, Richard E.: *See*—
Felice, Charles J., Jr.; Evans, Francis E.; Robinson, Martin A.; and Eibeck, Richard E., 4,265,871, Cl. 423-531.000.
Eichelburg, Robert J. Oral ingesta for animals. 4,265,913, Cl. 426-2 000.
Eichinger, Johann, to Carl Hurth Maschinen-und Zahnradfabrik. Z-drive for watercrafts. 4,265,625, Cl. 440-53.000.
Eickmann, Karl. Radial bearing. 4,265,497, Cl. 308-215.000.
Eidinger, Adolf; Flossel, Carl D.; Koppl, Georg; Ulrich, Alfred; and Schibli, Hans, to BBC Brown Boveri & Company Limited. Current limiting device for high voltage switching mechanisms. 4,266,258, Cl. 361-58.000.
Eisner, Albert M.: *See*—
Burke, Courtney L., 4,265,638, Cl. 44-56.000.

Electro-Nucleonics, Inc.: *See—*
Mandle, Richard M.; Karsai, Frank; and Krautheim, Raymond S., 4,265,855, Cl. 422-65.000.
Elgart, Alan. Work-holding device. 4,265,476, Cl. 294-64.00R.
Eli Lilly and Company: *See—*
Bonjouklian, Rosanne, 4,266,049, Cl. 544-16.000.
Gesellchen, Paul D.; and Shuman, Robert T., 4,265,808, Cl. 260-112.50R.
O'Doherty, George O. P., 4,265,901, Cl. 424-273.00B.
Elkins, Lincoln F., to Standard Oil Company. Shale oil recovery. 4,265,307, Cl. 166-248.000.
Ellsworth, James P.: *See—*
Mrenna, Stephen A.; and Ellsworth, James P., 4,266,210, Cl. 335-201.000.
El-Souessi, Monti. Selective drum series marking head. 4,265,172, Cl. 101-29.000.
Elswood, Ebbert L.; and Reynolds, Wyndall O., to Bell & Howell Company. Transducer systems with controlled damping. 4,266,287, Cl. 367-185.000.
Ely, John W., to Halliburton Company. Methods of water flooding and fracturing using clean, non-damaging fracturing fluids. 4,265,311, Cl. 166-271.000.
Emhart Industries, Inc.: *See—*
Bristol, Robert G., 4,266,144, Cl. 307-116.000.
Emmadi, Ramakrishna. Control valve mechanism for hydraulic clutch in a power transmission mechanism. 4,265,346, Cl. 192-0.034.
Emmert, Philip H.; Stevens, Richard A.; and Walkush, Glenn A., to General Motors Corporation. Closed loop air-fuel ratio controller with air bleed control. 4,265,208, Cl. 123-440.000.
Emonet, Henri, to Maco-Meudon. Compressed air feed control system for a tapping device. 4,265,322, Cl. 173-169.000.
Energy Materials Corporation: *See—*
Jewett, David N., 4,265,859, Cl. 422-199.000.
Enever, James A.: *See—*
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., 4,265,406, Cl. 241-16.000.
Engel, Gerhard: *See—*
Wessel, Wolf; and Engel, Gerhard, 4,265,200, Cl. 123-501.000.
Engel, William K.; and Miller, Dean E., to Caterpillar Tractor Co. Radial piston fluid translating device with power conserving scavenging means. 4,265,165, Cl. 91-490.000.
Engeler, William E.: *See—*
Papadofrangakis, Emmanuel; Engeler, William E.; and Fakiris, John A., 4,265,126, Cl. 73-861.250.
Engelsmann, Dieter; Wagner, Karl; and Hackenberg, Hubert, to AG-FA-Gevaert, A.G. Flash unit and camera. 4,265,527, Cl. 354-144.000.
Envirotech Corporation: *See—*
Clark, James W., 4,265,587, Cl. 414-723.000.
Epstein, Howard C.; and Uebbing, John J., to Hewlett-Packard Company. Optical shaft angle encoder. 4,266,125, Cl. 250-231.0SE.
Erdmann, Fritz: *See—*
Stahlhofen, Paul; and Erdmann, Fritz, 4,266,000, Cl. 430-192.000.
Erhardt, Manfred; and Stoeckl, Max, to Carl Hurth Maschinen-und Zahnradfabrik. Tooth-edge gear working machine. 4,265,575, Cl. 409-8.000.
Erickson, Wayne F.: *See—*
McCreary, Michael D.; Farley, William C.; and Erickson, Wayne F., 4,266,002, Cl. 430-218.000.
Ericksson, Jan C.; and Larsson, Rolf L., to Aminkemi AB. Method of heparinizing a charged surface of a medical article intended for blood contact. 4,265,927, Cl. 427-2.000.
Eriksson, Bengt O.; and Pahnke, Bror E. Device for marking and/or cutting pipes. 4,265,430, Cl. 266-54.000.
Ernst, Roland: *See—*
Hoffmann, Kurt; and Ernst, Roland, 4,266,151, Cl. 307-297.000.
Eschner, Axel, to Didier-Werke AG. Process for the production of a ceramic heat-retaining brick. 4,265,845, Cl. 264-63.000.
Esmil B.V.: *See—*
Gallottini, Emilio, 4,265,764, Cl. 210-390.000.
Esmil S.p.A.: *See—*
Gallottini, Emilio, 4,265,765, Cl. 210-401.000.
Essilor International Cie Generale d'Optique: *See—*
Coulon, Michel; and Laprade, Gerard, 4,265,850, Cl. 264-225.000.
Ethyl Corporation: *See—*
Hayes, Thomas H.; and Lo Maglio, Lewis C., 4,265,948, Cl. 428-35.000.
Eurotungstene: *See—*
Delattre, Marcel; and Romagnolo, Gerard, 4,265,007, Cl. 29-79.000.
Evans, Francis E.: *See—*
Felice, Charles J., Jr.; Evans, Francis E.; Robinson, Martin A.; and Eibeck, Richard E., 4,265,871, Cl. 423-531.000.
Evans, Michael G.: *See—*
Payne, Harris F.; and Evans, Michael G., 4,265,597, Cl. 417-32.000.
Evans, Paul S., to Garrett Corporation, The. Fluidic temperature sensor. 4,265,116, Cl. 73-357.000.
Exergie Societe de Personnes a Responsabilitie Limitee: *See—*
Wajc, Samuel J., 4,265,863, Cl. 423-119.000.
Exfin, S.A.: *See—*
Todeschini, Giuseppe, 4,265,104, Cl. 72-330.000.
Expansia: *See—*
Demosthene, Claude G.; and Aspisi, Christian R., 4,266,057, Cl. 544-330.000.
Extra, Piet M. J.; van den Honert, Taco H. J.; and van Lieshout, Jacobus J., to Oce-Nederland B.V. Automatic toner control. 4,265,997, Cl. 430-122.000.
Exxon Research & Engineering Co.: *See—*
Eberly, Paul E., Jr.; Mauldin, Charles H.; and Baird, William C., Jr., 4,265,786, Cl. 252-439.000.
Hatsell, William A., 4,265,553, Cl. 400-238.000.
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,266,034, Cl. 435-253.000.
Eymard, Michel, to ZODIAC. Elongated inflatable structures for flying device bodies. 4,265,418, Cl. 244-125.000.
Ezzell, Bobby R.; Malone, Jacquelyn M.; and Sorenson, Marius W., to Dow Chemical Company, The. Electrolysis of aqueous solutions of alkali-metal halides employing a flexible polymeric hydraulically-impermeable membrane disposed against a roughened surface cathode. 4,265,719, Cl. 204-98.000.
Fabbrica D'Armi Pietro Beretta S.p.A.: *See—*
Beretta, Pier C., 4,265,044, Cl. 42-41.000.
Beretta, Pier C., 4,265,161, Cl. 89-129.00B.
Fabre, Albert, to Rhone-Poulenc Industries. Binder compositions for texturized proteins and their use in the preparation of foodstuff. 4,265,917, Cl. 426-104.000.
Fakiris, John A.: *See—*
Papadofrangakis, Emmanuel; Engeler, William E.; and Fakiris, John A., 4,265,126, Cl. 73-861.250.
Falco, Charles M.: *See—*
Kampwirth, Robert T.; Schuller, Ivan K.; and Falco, Charles M., 4,266,008, Cl. 430-318.000.
Falinower, Charles, to Ciments Lafarge France. Analysis reactor and its use for volumetric analysis of a sample of a substance in powder form. 4,265,856, Cl. 422-68.000.
Falk, Robert A.; and Mueller, Karl F., to Ciba-Geigy Corporation. Perfluoroalkylthioethyl ether derivatives. 4,266,080, Cl. 568-45.000.
Faller, Rudolph A.; and Tolaas, William M., to Champion International Corporation. Paperboard tray. 4,265,390, Cl. 229-30.000.
Falomo, Lodovico. Apparatus for washing developed photographic and like films. 4,265,431, Cl. 266-101.000.
Fang, Jin-Liou: *See—*
Tsuchiya, Takuzo; Fang, Jin-Liou; and Rasmussen, Glen, 4,265,922, Cl. 426-520.000.
Fanning, William J., to Western Electric Company, Inc. Machine for winding strip material. 4,265,410, Cl. 242-56.100.
Farber, Milton: *See—*
Allen, Deborah L.; Farber, Milton; and Skewis, John D., 4,265,986, Cl. 430-18.000.
Farinon Corporation: *See—*
Anderson, Richard L.; and Fleig, William E., 4,266,293, Cl. 370-14.000.
Farley, Lloyd J.: *See—*
Zornes, Larry; Farley, Lloyd J.; and Powlenko, Edward J., 4,265,391, Cl. 229-34.00R.
Farley, William C.: *See—*
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Farmitalia Carlo Erba S.p.A.: *See—*
Bargiotti, Alberto; Cassinelli, Giuseppe; Arcamone, Federico; and DiMarco, Aurelio, 4,265,885, Cl. 424-180.000.
Farmos-Yhtyma Oy: *See—*
Koskenniska, Lasse A.; and Puhakka, Marie M., 4,265,824, Cl. 260-397.250.
Farooq, Saleem, to Ciba-Geigy Corporation. 2-Oxo- and 2-thioxo-1,3-dithiol compounds as active substances for regulating plant metabolism and their use. 4,265,655, Cl. 71-90.000.
Fasano, Osvaldo, to Studi Apparecchiature E Ricerche Tecniche. Control mechanism for parking brake. 4,265,345, Cl. 192-3.00R.
Fasolak, Ambrozy J. Paper roll backstand. 4,265,411, Cl. 242-58.600.
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method of processing the surface of workpieces including particularly the etching of surfaces containing copper or copper alloys. 4,265,722, Cl. 204-129.600.
Feakins, Patrick G., to Shell Internationale Research Maatschappij B.V. Animal ear-tags, their manufacture and their use. 4,265,876, Cl. 424-28.000.
Fee, David M., to Caterpillar Tractor Co. Fire extinguishing system having a linkage operated valve. 4,265,316, Cl. 169-19.000.
Feldstein, Nathan. Non-noble metal colloidal compositions comprising reaction products for electroless deposition. 4,265,942, Cl. 427-304.000.
Felice, Charles J., Jr.; Evans, Francis E.; Robinson, Martin A.; and Eibeck, Richard E., to Allied Chemical Corporation. Purification of boron-containing sulfuric acid. 4,265,871, Cl. 423-531.000.
Felix, Raymond A., to Stauffer Chemical Company. Novel cyclohexenone amino phenyl amides and their use as herbicides. 4,265,658, Cl. 71-118.000.
Feltrop, Floyd L. Hopper for mechanical seed planters. 4,265,368, Cl. 221-10.000.
Ferag AG: *See—*
Reist, Walter; and Glatz, Werner, 4,265,437, Cl. 493-435.000.
Ferard, Michel: *See—*
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Ferguson, Douglas J., to Four Star Corporation. Slat assembly. 4,265,383, Cl. 224-326.000.
Fernex, Michel: *See—*
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Feuersanger, Alfred E.: *See—*
McNeill, William H.; Feuersanger, Alfred E.; Haugsjaa, Paul O.; and Regan, Robert J., 4,266,162, Cl. 315-39.000.

Fiala, Richard J.: *See—*
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Fiedler, Willy A. Fuel control and injection system for I.C. engines. 4,265,209, Cl. 123-450.000.

Fields, Joseph E.; and Johnson, John H., to Monsanto Company. Method for controlling blood triglycerides. 4,265,879, Cl. 424-78.000.

Filippi, Aldo: *See—*
Rossi, Pier P.; Tempesti, Aldo; and Filippi, Aldo, 4,265,628, Cl. 8-115.500.

Finch, Harry: *See—*
Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., 4,265,891, Cl. 424-244.000.

Finlayson, James W.; and Johnson, Harold P., to Westinghouse Electric Corp. Inspection probe. 4,265,025, Cl. 33-178.00F.

Firmenich, S.A.: *See—*
Naf, Ferdinand; and Decorzant, Rene, 4,266,075, Cl. 560-120.000.

Fischer, Charles M., Jr.; and Price, Robert S. Gas scavenging exhaust system. 4,265,239, Cl. 128-205.170.

Fischer, Erhardt: *See—*
Tebbens, Klaas; Fischer, Erhardt; and Lo, Jhy-Dou R., 4,265,939, Cl. 427-222.000.

Fischer, Robert G.: *See—*
Pelser, Robert J.; Pelser, Lewis M.; Hill, Robert W.; Brown, Sanford W.; and Fischer, Robert G., 4,265,680, Cl. 148-103.000.

Fish, Leonard A.: *See—*
Burnett, Bradley W.; and Fish, Leonard A., 4,266,225, Cl. 340-799.000.

Flaherty, Louis W.; and Huber, Harold H. Remote fireplace damper control. 4,265,217, Cl. 126-288.000.

Fleig, William E.: *See—*
Anderson, Richard L.; and Fleig, William E., 4,266,293, Cl. 370-14.000.

Fleischer, Henry. Folding baby carriers. 4,265,481, Cl. 297-30.000.

Fleischer, Jean C.: *See—*
Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., 4,265,812, Cl. 260-158.000.

Flider, Frank S., to Justrite Manufacturing Company. Safety dispensing apparatus for flammable liquids. 4,265,375, Cl. 222-189.000.

Flossel, Carl D.: *See—*
Eidinger, Adolf; Flossel, Carl D.; Koppl, Georg; Ulrich, Alfred; and Schibli, Hans, 4,266,258, Cl. 361-58.000.

Flux, Peter R.: *See—*
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FMC Corporation: *See—*
Chiu, Tony T.; Wright, Bruce M.; Strasser, Jurgen H.; and Harper, Bruce M., 4,265,168, Cl. 99-448.000.
Presnall, Lance O.; and Thurner, Gary H., 4,265,332, Cl. 181-211.000.

Fodor, William G., to Sandvik, Inc. Combination cross and rip cut handsaw. 4,265,285, Cl. 145-31.00R.

Fogg, Harold E.: *See—*
Johnson, Kenneth O.; Fogg, Harold E.; and Hope, Ned A., 4,265,099, Cl. 64-13.000.

Ford Motor Company: *See—*
Pett, Robert A.; Rao, V. Durga N.; and Qaderi, S. Burhan A., 4,265,794, Cl. 260-28.50R.
Scott, Orland B.; and Van Camp, Garrett S., 4,265,340, Cl. 188-73.300.
Wilson, Donald H., 4,265,838, Cl. 261-52.000.

Ford, Warren T.: *See—*
Beasley, Glenn H.; Chong, Berni P.; Ford, Warren T.; and Neely, James W., 4,265,768, Cl. 210-682.000.

Forgo, Laszlo: *See—*
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Formhals, Gary G. Grain auger jack. 4,265,429, Cl. 254-100.000.

Foroni, Mario: *See—*
Bertotti, Franco; and Foroni, Mario, 4,266,233, Cl. 357-22.000.

Forster, Siegfried; Kleemann, Manfred; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans-Jurgen, to Rosenthal Technik AG; and Kernforschungsanlage Julich GmbH. Heat exchanger. 4,265,302, Cl. 165-165.000.

Fosdick, Dale P.: *See—*
Rosaen, Borje O.; and Fosdick, Dale P., 4,265,271, Cl. 137-540.000.
Rosaen, Borje O.; and Fosdick, Dale P., 4,265,761, Cl. 210-315.000.

Fosseux, Pierre-Yves: *See—*
Buhler, Marcel; Olofsson, Mats; and Fosseux, Pierre-Yves, 4,265,924, Cl. 426-582.000.

Foster, Ronnie D.; and Dickerson, Max R., to Baker Industries, Inc. Supervisory control system for a smoke detector. 4,266,219, Cl. 340-630.000.

Foster, Stephen W., to Almor Corporation. Convertible single-double belt check-out counter. 4,265,336, Cl. 186-66.000.

Four Star Corporation: *See—*
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Foure, Jean-Louis: *See—*
Chiron, Bernard; Foure, Jean-Louis; and de Vecchis, Michel, 4,265,512, Cl. 350-96.200.

Fox, Albert D., to D. W. Zimmerman Mfg., Inc. Working pit with articulated tool arm assembly. 4,265,147, Cl. 81-55.000.

Fox, Charles J. Collection of a surface layer of liquid. 4,265,758, Cl. 210-242.300.

Fox, Roland T. V.: *See—*
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,266,056, Cl. 544-311.000.

Fox, Theodore G.; and Zeisser, Melvin H., to United Technologies Corporation. Radially staged low emission can-annular combustor. 4,265,085, Cl. 60-39.060.

Framatome: *See—*
Lebouc, Bernard, 4,265,011, Cl. 29-720.000.

Frame, Norman J., to W. H. Brady Co. Thin panel display. 4,266,223, Cl. 340-719.000.

Frank, Arlen W., to United States of America, Agriculture. Quaternary ureidomethyl phosphonium salts. 4,265,945, Cl. 427-353.000.

Frank Mayer & Associates, Inc.: *See—*
Crosslen, Louis J., 4,265,038, Cl. 40-124.200.

Franke, Kurt; and Seifert, Gerd, to Siemens Aktiengesellschaft. X-ray diagnostic generator comprising an inverter supplying the high voltage transformer. 4,266,134, Cl. 250-409.000.

Frankiewicz, Theodore C., to Occidental Research Corporation. Use of formaldehyde as a chemical embrittling agent for waste. 4,265,636, Cl. 44-1.00C.

Frankland, Roger A., to Beckman Instruments, Inc. High performance information display panel. 4,266,224, Cl. 340-773.000.

Fraser, Daniel M.; Hausner, John E.; Hawkins, William J.; and Comiskey, Frederick K., to Stroh Brewery Co., The. Lift truck load position sensing device. 4,266,106, Cl. 200-61.440.

Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., to Greene Line Mfg. Corporation. Sheet feeding apparatus. 4,265,578, Cl. 414-130.000.

Freeman, Danny M.; Knight, Milton M., Jr.; Payton, Clarence M.; Simpson, Robert S.; and Smith, Howard B., Jr., to Calhoun Yarn Services, Inc. Method for space dyeing yarn. 4,264,993, Cl. 8-149.000.

Frias, Ronald J.: *See—*
Thoma, Paul E.; Crum, Louis J.; and Frias, Ronald J., 4,265,117, Cl. 73-359.00R.

Friberg, Nelson, to Owen-Illinois, Inc. Automatic scanner. 4,266,123, Cl. 250-205.000.

Fricke, Jobst; Voigt, Wolfgang; and Schmitz, Jurgen, to Colonia Management-und Beratungsgesellschaft mbH & Co., K.G. Synthetic production of sounds. 4,265,157, Cl. 84-1.190.

Friebel, Eberhard, to Siemens Aktiengesellschaft. Ring-piston meter with a planetary-gear differential. 4,265,145, Cl. 74-805.000.

Friese, Karl-Hermann: *See—*
Haecker, Wolf-Dieter; Friese, Karl-Hermann; and Topp, Bernhard, 4,265,724, Cl. 204-195.00S.

Friesnitz, Uwe: *See—*
Collin, Reimer; Diehr, Hans-Joachim; and Friesnitz, Uwe, 4,266,082, Cl. 568-639.000.

Frigoscandia Contracting AB: *See—*
Andersson, Gustaf A., 4,265,096, Cl. 62-380.000.

Frost, Stuart J.; Riley, Edward J.; and Bogdan, Ronald F., to United Technologies Corporation. Turbine blade growth measuring apparatus and method. 4,265,023, Cl. 33-174.00C.

Fuji Photo Film Co., Ltd.: *See—*
Adachi, Keiichi; Hirano, Shigeo; and Tsujino, Nobuyuki, 4,266,013, Cl. 430-410.000.
Ikeda, Tadashi; Sakai, Takeo; Takei, Haruo; and Inoue, Noriyuki, 4,266,003, Cl. 430-264.000.
Ishiguro, Shoji; Shishido, Tadao; Sakai, Takeo; Sasaki, Noboru; Nagaoka, Joji; and Matsuki, Minoru, 4,266,018, Cl. 430-550.000.
Kobayashi, Hidetoshi; Tanaka, Mitsugu; Inouye, Kozo; and Naito, Hideki, 4,266,019, Cl. 430-551.000.
Nagatomo, Shigeru; and Hori, Kiyotaka, 4,266,010, Cl. 430-355.000.
Saito, Hiroki, 4,265,941, Cl. 427-296.000.
Sakai, Nobuo; Nakamura, Kotaro; Morigaki, Masakazu; and Furutachi, Nobuo, 4,266,020, Cl. 430-551.000.
Tamai, Yasuo; and Ogawa, Hiroshi, 4,265,931, Cl. 427-48.000.
Yabe, Masao; Tatsuta, Sumitaka; Ochiai, Takeji; Suzuki, Tamotsu; and Sekiya, Masayoshi, 4,265,946, Cl. 427-393.500.

Fuji Photo Optical Co., Ltd.: *See—*
Furusawa, Motoyoshi; Horio, Motohiko; Togashi, Shyuichi; and Ohmiya, Akio, 4,265,412, Cl. 242-71.400.
Kato, Kenichi, 4,265,940, Cl. 427-292.000.

Fujii, Osamu; Kishimoto, Toshio; and Kobayashi, Akio, to Toyo Rubber Chemical Industrial Corporation. Resilient hydrophobic foamed polymer. 4,266,043, Cl. 521-175.000.

Fujikake, Kenji: *See—*
Katagiri, Haruo; Fujikake, Kenji; and Yamada, Katsuhito, 4,265,596, Cl. 416-236.00A.

Fujikawa, Kanichi: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,266,064, Cl. 546-345.000.

Fujiki, Yoshinori. Process for producing crystalline fibrous potassium titanate. 4,265,872, Cl. 423-598.000.

Fujimori, Shinichiro: *See—*
Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, 4,265,816, Cl. 260-239.55C.

Fujimori, Yoshinori; Ishizawa, Akio; and Hashimoto, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Method for production of composite piezoelectric material. 4,265,841, Cl. 264-22.000.

Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo,

Takashi, to Sumitomo Chemical Company Limited. Novel insecticidal composition. 4,266,074, Cl. 560-105.000.

Fujisawa, Tamotsu; Kondo, Kiyoshi; and Sakai, Kunikazu, to Sagami Chemical Research Center. Process for preparing thiophene derivatives. 4,266,067, Cl. 549-79.000.

Fujitsu Fanuc Limited: *See—*
Yamazaki, Etuo, 4,266,172, Cl. 318-578.000.

Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; and Tanaka, Hitoshi, to TDK Electronics Co., Ltd. High dielectric constant type ceramic composition. 4,265,668, Cl. 106-73.300.

Fukuda, Sunichi, to Rogers Corporation. Layer-built laminated bus embedding condensers. 4,266,091, Cl. 174-72.00B.

Fukuda, Tadaji: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,265,991, Cl. 430-64.000.

Fukunaga, Atsuo F. Anesthetic system. 4,265,235, Cl. 128-200.240.

Fulmer, Ray M.: *See—*
Carruth, Grant F.; Coffey, Fred S.; and Fulmer, Ray M., 4,265,151, Cl. 83-102.000.

Fulton, Donald E., to Charles Stark Draper Laboratory, Inc., The. Induction motor slip frequency controller. 4,266,176, Cl. 318-801.000.

Fulton, William M., to Albany International Corp. Drainage device with bonded wear surface and method of fabrication. 4,265,706, Cl. 162-352.000.

Fung, David P. C.: *See—*
Shen, Kuo-Cheng; Fung, David P. C.; and Calve, Louis, 4,265,846, Cl. 264-109.000.

Funk, Harald F. System for treating and recovering energy from exhaust gases. 4,265,088, Cl. 60-648.000.

Furst, Leander: *See—*
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,265,722, Cl. 204-129.600.

Furukawa, Kiyoshi: *See—*
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; and Tanaka, Hitoshi, 4,265,668, Cl. 106-73.300.

Furusawa, Motoyoshi; Horio, Motohiko; Togashi, Shyuichi; and Ohmiya, Akio, to Fuji Photo Optical Co., Ltd. Film wind-up device for a camera. 4,265,412, Cl. 242-71.400.

Furutachi, Nobuo: *See—*
Sakai, Nobuo; Nakamura, Kotaro; Morigaki, Masakazu; and Furutachi, Nobuo, 4,266,020, Cl. 430-551.000.

Furutani, Toshinobu: *See—*
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,265,930, Cl. 427-34.000.

Furuya, Rikizo: *See—*
Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, 4,265,816, Cl. 260-239.55C.

Futami, Yoshinori; and Ota, Tomio, to Kabushiki Kaisha Suwa Seikosha. Electronic wristwatch control mechanism. 4,266,290, Cl. 368-76.000.

G.D. S.p.A.: *See—*
Seragnoli, Enzo, 4,265,073, Cl. 53-542.000.

GAF Corporation: *See—*
Nahta, Roop C., 4,265,704, Cl. 162-156.000.

Gaffard, Jean-Paul, to Compagnie Generale d'Electricite. Device which measures the mutual coherence function of a laser beam. 4,265,539, Cl. 356-345.000.

Gallardo, Vicente C., Jr.: *See—*
Bucy, Raymond W., Jr.; Gallardo, Vicente C., Jr.; Hollett, Ronald C.; and Young, Eric A., 4,265,595, Cl. 416-220.00R.

Gallottini, Emilio, to Esmil B.V. Rotary drum vacuum filter. 4,265,764, Cl. 210-390.000.

Gallottini, Emilio, to Esmil S.p.A. Vacuum filterbelt apparatus. 4,265,765, Cl. 210-401.000.

Gambro AB: *See—*
Nylen, Ulf T. G.; Olsson, Lars-Goran; Paulsson, Bengt G.; Qvarnstrom, Lars A. G.; and Wichers, Rolf H. L., 4,266,021, Cl. 435-14.000.

Gambro Dialysatoren GmbH & Co. KG: *See—*
Rosemeier, Friedrich; and Killmaier, Horst, 4,265,428, Cl. 251-346.000.

Gammon, Michael W., to Metallurgical Processes Limited; and I.S.C. Smelting. Condensation of metal vapor. 4,265,644, Cl. 55-257.0NP.

Gandolfo, Daniel; and Cooper, David J., to Procter & Gamble Company, The. Suds suppressing compositions and detergents containing them. 4,265,779, Cl. 252-135.000.

Gappa, Gunther; Juntgen, Harald; and Klein, Jurgen, to Bergwerksverband GmbH. Method and apparatus for purification of waste water. 4,265,767, Cl. 210-662.000.

Garbini, Louis K. Rifle and weapon rest. 4,265,045, Cl. 42-94.000.

Garcea, Giampaolo, to Alfa Romeo S.p.A. Device for checking overheating phenomena within the explosion chambers of controlled-ignition I.C. engines. 4,265,205, Cl. 123-425.000.

Garcea, Giampaolo, to Alfa Romeo S.p.A. Device for detecting the knock phenomena in internal combustion engines having a controlled-ignition device, based on the use of temperature sensors. 4,265,206, Cl. 123-425.000.

Garner, James W., to Grow Group, Inc. Method for decreasing pollution resulting from the application of a coating composition. 4,265,944, Cl. 427-353.000.

Garner, John N., to Northern Telecom Limited. Power filling of cable core units. 4,265,686, Cl. 156-48.000.

Garoche, Didier: *See—*
Bauer, Daniel; Beck, Jean-Paul; Boiteau, Claude; and Garoche, Didier, 4,266,116, Cl. 219-274.000.

Garrett Corporation, The: *See—*
Evans, Paul S., 4,265,116, Cl. 73-357.000.
Wickson, Arthur K., 4,266,148, Cl. 307-252.00J.

Gartzke, Rudolf E. Ratchet tool. 4,265,148, Cl. 81-57.290.

Gaspard, Martin. Chunk picking machine. 4,265,318, Cl. 171-63.000.

Gasse, Robert W., to Hunt & Moscrop (Textile Machinery) Limited. Apparatus for the production of duplicate, and other films from original films. 4,265,533, Cl. 355-110.000.

Gast, Fritz G. H.: *See—*
Hallbauer, Hans-Dieter; Gast, Fritz G. H.; Hoenow, Klaus-Werner; and Rahn, Armin, 4,265,109, Cl. 73-862.230.

Gaule, Gerhart K.; Yarwood, John C.; Tyler, Derek E.; and Yun, Ik Y., to Olin Corporation. Duflex impedance shield for shape control in electromagnetic casting. 4,265,294, Cl. 164-49.000.

Gebhart, Frank L.: *See—*
Peters, John W.; and Gebhart, Frank L., 4,265,932, Cl. 427-53.100.

Geelhaar, Hans J.: *See—*
Mueller-Mall, Rudolf; Wendel, Kurt; Geelhaar, Hans J.; and Melan, Michael, 4,265,796, Cl. 260-29.60R.

Gefvert, Leland V., to Atlantic Richfield Company. Ice barrier for islands. 4,265,569, Cl. 405-217.000.

Geis, Wilhelm: *See—*
Stiltz, Erwin; Lindenmayer, Heinz; Geis, Wilhelm; and Wolf, Otto, 4,265,435, Cl. 269-139.000.

Geisler, Klaus: *See—*
Mitschke, Karl-Heinz; Geisler, Klaus; and Niederprum, Hans, 4,265,831, Cl. 564-96.000.

Geisthoff, Hubert, to Jean Walterscheid GmbH. Release device. 4,265,327, Cl. 180-53.00D.

General Electric Company: *See—*
Baird, Leslie L.; and Stolz, Gary M., 4,265,583, Cl. 414-284.000.
Benhase, George J., Jr., 4,265,334, Cl. 184-6.110.
Bucy, Raymond W., Jr.; Gallardo, Vicente C., Jr.; Hollett, Ronald C.; and Young, Eric A., 4,265,595, Cl. 416-220.00R.
Burns, Richard D.; and Wesseldyk, Albert J., 4,265,413, Cl. 242-75.300.
Howell, Edward K., 4,266,259, Cl. 361-97.000.
Ipsen, Peter G., 4,265,472, Cl. 285-179.000.
Jablonski, Richard J.; and Kruh, Daniel, 4,266,047, Cl. 528-322.000.
Johnson, Kenneth O.; Fogg, Harold E.; and Hope, Ned A., 4,265,099, Cl. 64-13.000.
Mailer, Hugh; and Laskos, Stanley, Jr., 4,265,784, Cl. 252-299.000.
Marshall, Robert A., 4,266,154, Cl. 310-219.000.
Nolan, Mary E.; Kosek, John A.; and La Conti, Anthony B., 4,265,714, Cl. 204-1.00T.
Papadofrangakis, Emmanuel; Engeler, William E.; and Fakiris, John A., 4,265,126, Cl. 73-861.250.
Ruegg, Eugen H., 4,266,267, Cl. 361-386.000.
Webb, William M., 4,265,089, Cl. 62-72.000.
Weinstein, Barry; and Steyer, William, 4,265,646, Cl. 55-306.000.

General Engineering & Applied Research: *See—*
Sutphin, Howard D.; and Lieber, Albert J., 4,266,247, Cl. 358-217.000.

General Mills, Inc.: *See—*
Tsuchiya, Takuzo; Fang, Jin-Liou; and Rasmussen, Glen, 4,265,922, Cl. 426-520.000.

General Motors Corporation: *See—*
Clarke, Stephen E., 4,265,348, Cl. 192-58.00B.
Dubetz, Martin W.; and Bilge, Umit, 4,265,119, Cl. 73-588.000.
Emmert, Philip H.; Stevens, Richard A.; and Walkush, Glenn A., 4,265,208, Cl. 123-440.000.
Meloeny, Michael R., 4,265,211, Cl. 123-643.000.
Peeples, Denny L., 4,265,087, Cl. 60-550.000.
Suszko, Donald H.; and Zens, John F., 4,265,468, Cl. 280-729.000.

General Signal Corporation: *See—*
Severance, Wesley A.; and Shaw, Julie Y. L., 4,265,957, Cl. 428-143.000.

George, Andrew S.: *See—*
Cannon, Thomas B.; Dalley, James E.; and George, Andrew S., 4,266,097, Cl. 179-2.00A.

Gerb. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Schupphaus, Herbert; and Klimeck, Hugo, 4,265,488, Cl. 299-43.000.

Gerritsen, Adrian: *See—*
Mainberger, Walter A.; and Gerritsen, Adrian, 4,265,070, Cl. 53-433.000.

Gerry, Martin E. Stratified fuel ignition system including humid air injection. 4,265,201, Cl. 123-260.000.

Gesellchen, Paul D.; and Shuman, Robert T., to Eli Lilly and Company. Pharmacologically active peptides. 4,265,808, Cl. 260-112.50R.

Gewerkschaft Eisenhutte Westfalia: *See—*
Stuckmann, Dieter; and Jutte, Hans, 4,265,565, Cl. 405-145.000.
Temme, Helmut, 4,265,359, Cl. 198-731.000.

Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pricca, Angelo, to Montecatini Edison S.p.A. Polymerization catalyst. 4,265,785, Cl. 252-429.00B.

Giardino, David A.: *See—*
Wallace, William K.; and Giardino, David A., 4,265,108, Cl. 73-862.210.
Wallace, William K.; and Giardino, David A., 4,265,265, Cl. 137-56.000.

Gibbons, Edward J.: *See*—
Gross, William S.; Gibbons, Edward J.; and Wraga, Joseph B., 4,265,781, Cl. 252-174.000.

Gibson, Keith: *See*—
Tang, Peter; Nielsen, Grethe C.; Gibson, Keith; Aunstrup, Knud; and Schiff, Hans, 4,266,031, Cl. 435-188.000.

Giflo, Henrik. High-strength free-cutting steel able to support dynamic stresses. 4,265,660, Cl. 75-123.00B.

Gilicinski, George A.; and Lawrence, Rodney G., to Petrolite Corporation. Wax formulations. 4,265,663, Cl. 106-10.000.

Gillis, Robert E. Tent. 4,265,259, Cl. 135-1.00R.

Gillis, Robert E. Flexible vault structure. 4,265,260, Cl. 135-3.00R.

Gipson, Robert M.: *See*—
McEntire, Edward E.; and Gipson, Robert M., 4,265,821, Cl. 260-348.160.

Girg, Friedrich: *See*—
Debus, Gerhard; Girg, Friedrich; and Knittel, Volker, 4,265,674, Cl. 106-314.000.

Gist Brocades, N.V.: *See*—
Gootjes, Johan, 4,265,894, Cl. 424-250.000.

Gitchel, Wayne B.: *See*—
Copa, William M.; and Gitchel, Wayne B., 4,265,747, Cl. 210-758.000.

Giurtino, Joel F.; and Anderson, Robert L., to Cobe Laboratories, Inc. Leakproof adhesive sealing. 4,265,303, Cl. 165-166.000.

Givaudan Corporation: *See*—
Chalk, Alan J.; and Magennis, Steven A., 4,266,087, Cl. 568-875.000.

Glassman, Jacob A. Double-duty diaper. 4,265,245, Cl. 128-287.000.

Glatz, Werner: *See*—
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Glaxo Group Limited: *See*—
Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., 4,265,891, Cl. 424-244.000.

Gleim, William K. T. Method of enhancing distillate yield in a hydrocarbonaceous material thermocracking process. 4,265,711, Cl. 201-29.000.

Glinsmann, Gilbert R.: *See*—
Hedges, James H.; and Glinsmann, Gilbert R., 4,265,308, Cl. 166-252.000.

Gloor, Cary A.: *See*—
Schepers, James S.; and Gloor, Cary A., 4,265,048, Cl. 47-1.500.

Glover, Charles G., to Lodge & Shipley Company, The. Apparatus for combining articles from plural lanes into a single lane. 4,265,356, Cl. 198-444.000.

Goedvolk, Arie, to Koninklijke Adriaan Volker Groep B.V. Drag-head for a suction dredger with a pivotable sight. 4,265,035, Cl. 37-58.000.

Goff, Willie, Jr.: *See*—
Bemis, John D.; and Goff, Willie, Jr., 4,265,552, Cl. 400-236.000.

Gohla, Werner; Hestermann, Klaus; Kandler, Joachim; Wasel-Nielen, Horst-Dieter; Sommer, Klaus; Rohlfs, Hans-Adolf; and Merkenich, Karl, to Hoechst Aktiengesellschaft. Detergent and cleaning compositions. 4,265,776, Cl. 252-98.000.

Goldie, Harry, to Westinghouse Electric Corp. Receiver protector having means for suppressing internally generated noise signal frequencies. 4,266,202, Cl. 333-13.000.

Goldsmith, Sydney A. Harvesting apparatus. 4,265,080, Cl. 56-330.000.

Goldstein, Rachel; Kukanskis, Peter E.; and Grunwald, John J., to MacDermid Incorporated. Method and composition for continuous electroless copper deposition using a hypophosphite reducing agent in the presence of cobalt or nickel ions. 4,265,943, Cl. 427-305.000.

Goncharov, Evgeny S.; Prilutsky, Anatoly N.; and Shevchuk, Viktor I. Cleaning and/or grading machine for free-flowing materials. 4,265,738, Cl. 209-31.000.

Goodyear Tire & Rubber Company, The: *See*—
Curtiss, Walter W., Jr.; and O'Flanagan, Patrick T., 4,265,293, Cl. 152-354.00R.
Stalter, Robert J., 4,265,484, Cl. 297-452.000.

Gootjes, Johan, to Gist Brocades, N.V. Piperazine derivatives. 4,265,894, Cl. 424-250.000.

Gordon Johnson Company: *See*—
Hathorn, Jack L.; and Scheier, Donald J., 4,265,001, Cl. 17-11.000.

Gordon, Roy G. Electrically conductive, infrared reflective, transparent coatings of stannic oxide. 4,265,974, Cl. 428-432.000.

Gorewitz, Lynda. Temporary plant covers. 4,265,049, Cl. 47-26.000.

Gorski, Ekkehard, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Method for producing sandwich type structural components. 4,265,688, Cl. 156-73.100.

Gorsuch, Garald W.; and Schnelle, Eldon D. Free standing stove. 4,265,213, Cl. 126-66.000.

Goscenski, Edward J., Jr.; and Konkle, Phillip E., to Eaton Corporation. Latch mechanism for locking differential. 4,265,143, Cl. 74-710.500.

Goto, Hajime; Amemiya, Ikuzo; and Nakayama, Masanobu, to Kabushikikaisha Kanagawa Seisakusho. Apparatus for producing braun tubes. 4,265,652, Cl. 65-273.000.

Gould Inc.: *See*—
Di Marco, Bernard; and Kralik, Andrew J., 4,266,209, Cl. 335-6.000.
Perkins, Norman P., Jr., 4,266,105, Cl. 200-50.00A.

Graff, Eugene A., to Westinghouse Electric Corp. Phosphor-coating composition and method for electric discharge lamp. 4,265,950, Cl. 428-35.000.

Granzow, Daniel B.: *See*—
Ammann, David W.; and Granzow, Daniel B., 4,265,280, Cl. 141-98.000.

Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., to Universal Precision Machining Co. Apparatus for heat sealing. 4,265,696, Cl. 156-443.000.

Graves, Vernard L.: *See*—
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,265,696, Cl. 156-443.000.

Gray, Bobby G.: *See*—
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Green Cross Corporation, The: *See*—
Kagitani, Yoshio; Imagawa, Takashi; Inahara, Hirohisa; and Watanabe, Ryozo, 4,265,888, Cl. 424-233.000.

Greene, Jerrold W.: *See*—
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,265,578, Cl. 414-130.000.

Greene Line Mfg. Corporation: *See*—
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,265,578, Cl. 414-130.000.

Greenlee, Donald R.; and Hyde, Bill J., to Dresser Industries, Inc. Swab cup reinforcing member support. 4,265,459, Cl. 277-212.00C.

Greer Hydraulics, Incorporated: *See*—
Zahid, Abduz, 4,265,274, Cl. 138-30.000.

Greubel, Waldemar; and Krueger, Hans, to Siemens Aktiengesellschaft. Display device with a light valve operated in a time division multiplex method. 4,265,516, Cl. 350-345.000.

Grieder, Alfred; and Coers, Klaus-Jurgen, to Ciba-Geigy Corporation. Process for the preparation of N-(1-alkoxycarbonylethyl)-2,6-dialkylanilines. 4,266,071, Cl. 560-43.000.

Grier, William R.: *See*—
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,265,558, Cl. 400-672.200.

Griesel, Karl-Heinz, to Intermedicat GmbH. Urine collecting and measuring instrument. 4,265,118, Cl. 73-427.000.

Grimmer, Paul D.: *See*—
Swiatosz, Edmund; Dykes, Wiley V.; Grimmer, Paul D.; and Lane, Bruce V., 4,265,238, Cl. 128-205.120.

Groeneweg, Abraham: *See*—
Versteeg, Frits J.; and Groeneweg, Abraham, 4,266,129, Cl. 250-330.000.

Gross, William S.; Gibbons, Edward J.; and Wraga, Joseph B., to Colgate-Palmolive Company. Low density spray dried product. 4,265,781, Cl. 252-174.000.

Grover, Robert R., to Kingsbury Machine Tool Corporation. Machine tool transfer bar actuator unit. 4,265,131, Cl. 74-89.160.

Grow Group, Inc.: *See*—
Garner, James W., 4,265,944, Cl. 427-353.000.

Grudzinskas, Charles V.; Wissner, Allan; and Chen, Sow-Mei L., to American Cyanamid Company. Prostacyclin analogs of the 1 series and related analogs. 4,265,904, Cl. 424-285.000.

Gruett, Monte D.: *See*—
Lesher, George Y.; and Gruett, Monte D., 4,265,895, Cl. 424-256.000.

Gruffaz, Max; and Micaelli, Odile, to Rhone-Poulenc Industries. Preparation of ethyl carboxylate. 4,266,076, Cl. 560-247.000.

Grumman Aerospace Corporation: *See*—
Aleck, Benjamin J., 4,265,467, Cl. 280-721.000.

Grundmann, Raban; and Maahs, Gunther, to Chemische Werke Huls Aktiengesellschaft. Flame retardant thermoplastic synthetic resin. 4,265,806, Cl. 260-45.8NT.

Grunert, Kurt A.: *See*—
Krause, Robert F.; Pavlik, Norman M.; and Grunert, Kurt A., 4,265,681, Cl. 148-111.000.

Grunwald, John J.: *See*—
Goldstein, Rachel; Kukanskis, Peter E.; and Grunwald, John J., 4,265,943, Cl. 427-305.000.

Gsell, Laurenz; Ackermann, Peter; and Wehrli, Rudolf, to Ciba-Geigy Corporation. N-N-Dimethyl-1-(1'-methyl-2'-methoxyethyl)-1,2,4-triazolylcarbamates. 4,265,897, Cl. 424-269.000.

GTE Automatic Electric Laboratories Inc.: *See*—
White, Thomas E., 4,266,103, Cl. 179-99.00E.

GTE Laboratories Incorporated: *See*—
McNeill, William H.; Feuersanger, Alfred E.; Haugsjaa, Paul O.; and Regan, Robert J., 4,266,162, Cl. 315-39.000.
Proud, Joseph M.; and Smith, Robert K., 4,266,166, Cl. 315-248.000.
Proud, Joseph M.; and Baird, Donald H., 4,266,167, Cl. 315-248.000.
Wellington, Charles K.; Dakss, Mark L.; and Benasutti, John E., 4,265,514, Cl. 350-96.210.

GTE Products Corporation: *See*—
Chenot, Charles F., 4,266,160, Cl. 313-486.000.
Kasenga, Anthony F.; and Chenot, Charles F., 4,266,161, Cl. 313-487.000.
Shaffer, Francis N., 4,266,137, Cl. 250-483.000.

Guay, Roger G.: *See*—
Bollinger, Wayne A.; and Guay, Roger G., 4,265,763, Cl. 210-323.200.

Gubelmann, Walter S., executor: *See*—
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,265,558, Cl. 400-672.200.

Gubelmann, William S., deceased; by Gubelmann, Walter S., executor; and Grier, William R., to Realty and Industrial Corporation. Differential key lock mechanism for justifying text writing composing machine. 4,265,558, Cl. 400-672.200.

Guetlhuber, Friedrich: *See*—
Miserlis, Constantine D.; Luke, Albert G., Jr.; Laber, Walter; and Guetlhuber, Friedrich, 4,265,223, Cl. 126-435.000.

Gulf Oil Corporation: *See—*
Durbin, Anthony T.; and Kennedy, Bruce A., 4,265,486, Cl. 299-2.000.

Gupta, Ashok K.: *See—*
Dias, Francisco J.; Gupta, Ashok K.; Gyarmati, Erno; Kampel, Marian; Luhleich, Hartmut; Munzer, Rudolf; and Naoumidis, Aristidis, 4,265,843, Cl. 264-57.000.

Gurbin, Florian. Adjustable pitch fan. 4,265,591, Cl. 415-148.000.

Gurov, Evgeny I.: *See—*
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.

Gustav Georg Veith GmbH & Co. KG: *See—*
Veith, Gustav G., 4,265,178, Cl. 104-88.000.

Gutman, Nathan: *See—*
Cain, Donald E.; and Gutman, Nathan, 4,265,203, Cl. 123-367.000.

Gyarmati, Erno: *See—*
Dias, Francisco J.; Gupta, Ashok K.; Gyarmati, Erno; Kampel, Marian; Luhleich, Hartmut; Munzer, Rudolf; and Naoumidis, Aristidis, 4,265,843, Cl. 264-57.000.

Haase, Martin O., Jr., to Binks Manufacturing Company. Voltage controlled power supply for electrostatic coating apparatus. 4,266,262, Cl. 361-228.000.

Haasis, Hans, Jr. Unitized refrigeration and water heating system. 4,265,094, Cl. 62-238.600.

Habegger, Willy: *See—*
Lauber, Ernst, 4,265,326, Cl. 180-8.00R.

Haberl, Rainer; and Kastner, Josef, to Semperit Aktiengesellschaft. Force measuring capacitor. 4,266,263, Cl. 361-283.000.

Hachisuka, Shunji; Kurashige, Shinji; and Saahiro, Yasuo, to Tokyo Rope Mfg. Co., Ltd. Metal wire cord. 4,265,678, Cl. 148-12.00B.

Hackenberg, Hubert: *See—*
Engelsmann, Dieter; Wagner, Karl; and Hackenberg, Hubert, 4,265,527, Cl. 354-144.000.

Hackmyer, Saul A. Commercial hydrogen gas production by electrolysis of water while being subjected to microwave energy. 4,265,721, Cl. 204-129.000.

Hadl, Clyde F.: *See—*
Amberg, Stephen W.; and Hadl, Clyde F., 4,265,357, Cl. 198-460.000.

Haecker, Wolf-Dieter; Friese, Karl-Hermann; and Topp, Bernhard, to Robert Bosch GmbH. Electrochemical sensor, particularly oxygen sensor to determine exhaust gas composition from automotive internal combustion engines. 4,265,724, Cl. 204-195.00S.

Haemers, Anita G. W. G.: *See—*
de Cooker, Mario G. R. T.; and Haemers, Anita G. W. G., 4,266,052, Cl. 544-192.000.

Hagen, Floyd W.: *See—*
De Leo, Richard V.; and Hagen, Floyd W., 4,265,112, Cl. 73-180.000.

Halcon Research and Development Corp.: *See—*
Moy, David, 4,266,070, Cl. 560-24.000.

Hall, Clarence J. Home rotary paint mixer. 4,265,548, Cl. 366-208.000.

Hall, John B.: *See—*
Wiegers, Wilhelmus J.; and Hall, John B., 4,265,836, Cl. 570-230.000.

Hall, John H., to Micro Power Systems Inc. High temperature refractory metal contact assembly and multiple layer interconnect structure. 4,265,935, Cl. 427-89.000.

Hall, Thornton D. Folding sideboard gooseneck trailer. 4,265,477, Cl. 296-14.000.

Hallbauer, Hans-Dieter; Gast, Fritz G. H.; Hoenow, Klaus-Werner; and Rahn, Armin, to C. Plath KG. Wrench with angular rotation readout. 4,265,109, Cl. 73-862.230.

Halliburton, Charles R. Modular Shelving. 4,265,501, Cl. 312-108.000.

Halliburton Company: *See—*
Ely, John W., 4,265,311, Cl. 166-271.000.
Kierbow, Gerald C.; Tomlinson, Harvard L.; Horinek, Herbert J.; and Crain, Stephen F., 4,265,266, Cl. 137-101.190.

Halushka, Perry V.: *See—*
Jollow, David J.; and Halushka, Perry V., 4,265,909, Cl. 424-324.000.

Hamaguti, Takashi: *See—*
Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,265,869, Cl. 423-447.400.

Hamas, Robert S. Mammary prosthesis. 4,264,990, Cl. 3-36.000.

Hamer, David E.: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,265,822, Cl. 260-397.200.

Hamersley Iron Pty. Limited: *See—*
Jordon, John V. W., 4,265,400, Cl. 238-14.400.

Hamilton, Harold V.; and Melendy, Harold A., to Barry Wright Corporation. Hydraulic clamp. 4,265,434, Cl. 269-27.000.

Hamm, James E., Jr. Solar energy concentration system. 4,266,179, Cl. 322-2.00R.

Handler, Howard, to Datapower, Inc. High intensity discharge lamp starting circuit. 4,266,165, Cl. 315-224.000.

Handler, Sid: *See—*
Parker, John A.; Handler, Sid; and Snook, Randolph W., 4,265,166, Cl. 98-58.000.

Handschuch, Karl: *See—*
Braun, Erwin; Bock, Erich; Handschuch, Karl; and Schuller, Edmund, 4,265,083, Cl. 57-263.000.

Handte, Herbert, to Moog GmbH. Jig for storing adjustment positions. 4,265,024, Cl. 33-175.000.

Hanisko, John C. P., to Bendix Corporation, The. Electric control apparatus for internal combustion engines. 4,265,210, Cl. 123-490.000.

Hansen, Kjell, to Jon Erlend Glommen. Apparatus for the remote control of mains operated DC and AC welding machines. 4,266,114, Cl. 219-132.000.

Hara, Akio: *See—*
Miyake, Masaya; Nakano, Minol; Yamamoto, Takaharu; and Hara, Akio, 4,265,662, Cl. 75-238.000.

Hara, Hajime: *See—*
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,265,793, Cl. 260-23.0EP.

Hara, Kazuyuki; and Kamada, Takeshi, to Ricoh Company, Ltd. Facsimile transmission and reception apparatus. 4,266,251, Cl. 358-286.000.

Harada, Takesi: *See—*
Sumikawa, Seizi; and Harada, Takesi, 4,265,395, Cl. 236-13.000.

Harmon, Bud G.: *See—*
Skoch, Leroy V.; Harmon, Bud G.; Dickerson, Charles W.; and Chou, Nelson S., 4,265,916, Cl. 426-74.000.

Harmon, Zita K.: *See—*
Owen, Peter W.; Harmon, Zita K.; and Tomalia, Donald A., 4,265,825, Cl. 260-401.000.

Harnish, James R., to Borg-Warner Corporation. Heat pump control system. 4,265,299, Cl. 165-12.000.

Harp, Marlyn F.; Diepenbrock, James L., Jr.; and Nelsen, M. Dean, to Boeing Company, The. Honeycomb core with internal septum and method of making same. 4,265,955, Cl. 428-116.000.

Harper, Bruce M.: *See—*
Chiu, Tony T.; Wright, Bruce M.; Strasser, Jurgen H.; and Harper, Bruce M., 4,265,168, Cl. 99-448.000.

Harrell, Terry R.; and Pfeiffer, Robert C., to Allied Chemical Corporation. Emergency release device for seat belt retractor. 4,265,415, Cl. 242-107.40A.

Harris Corporation: *See—*
Belfatto, Robert V., 4,266,201, Cl. 332-9.00R.

Harsch, Klaus: *See—*
Streit, Klaus; Harsch, Klaus; and Schulzke, Peter, 4,266,261, Cl. 361-154.000.

Hartwell Corporation: *See—*
Poe, L. Richard, 4,265,474, Cl. 292-241.000.

Hasegawa, Hiroshi, to Tokyo Engine Kogyo Kabushiki Kaisha. Foot controller for electrical dental instruments. 4,265,622, Cl. 433-101.000.

Hasegawa, Tetsuo; Kato, Shigeo; and Miyashita, Takeshi, to Canon Kabushiki Kaisha. Pressure fixable capsule toner. 4,265,994, Cl. 430-107.000.

Hasegawa, Toshio: *See—*
Kawamura, Takayuki; Tazaki, Kichiya; Sakakiyama, Takashi; and Hasegawa, Toshio, 4,265,977, Cl. 428-511.000.

Hashimoto, Minoru: *See—*
Fujimori, Yoshinori; Ishizawa, Akio; and Hashimoto, Minoru, 4,265,841, Cl. 264-22.000.

Hashimoto, Naoto; and Kishi, Toyokazu, to Takeda Chemical Industries. Matansinol 3-n-hexadecanoate. 4,265,814, Cl. 260-239.30P.

Hatada, Kenji; Kobayashi, H.; and Yokura, Miyoshi, to Toray Industries, Inc. Plastic tube having a crosslinked thin layer on the surface. 4,265,276, Cl. 138-177.000.

Hathorn, Jack L.; and Scheier, Donald J., to Gordon Johnson Company. Opening method for poultry carcasses. 4,265,001, Cl. 17-11.000.

Hatsell, William A., to Exxon Research & Engineering Co. Ribbon threading assembly for an impact printer. 4,265,553, Cl. 400-238.000.

Hatton, C. W.; Orr, J. C.; and Stevenson, R. G. Stall stabilizer for a centrifugal rotor. 4,265,593, Cl. 416-183.000.

Haugsjaa, Paul O.: *See—*
McNeill, William H.; Feuersanger, Alfred E.; Haugsjaa, Paul O.; and Regan, Robert J., 4,266,162, Cl. 315-39.000.

Hauni-Werke Korber & Co. KG.: *See—*
Helms, Adolf, 4,265,255, Cl. 131-69.000.
Koch, Franz-Peter; Pinck, Peter; Petersen, Kurt-Eckard; Lange, Norbert; Kohler, Elke; and Bornfleth, Ulrich, 4,265,254, Cl. 131-281.000.

Hausner, John E.: *See—*
Fraser, Daniel M.; Hausner, John E.; Hawkins, William J.; and Comiskey, Frederick K., 4,266,106, Cl. 200-61.440.

Haussmann, Robert H.: *See—*
Steensma, Peter D.; Haussmann, Robert H.; and Polcer, Anton J., 4,266,183, Cl. 324-52.000.

Havens, Carl B., to Dow Chemical Company, The. Method and apparatus for forming of reinforced tube. 4,265,853, Cl. 264-519.000.

Hawkins, J. C. Personnel alarm circuit for industrial machinery. 4,266,221, Cl. 340-679.000.

Hawkins, Wallace H. Loading device for vehicle beds. 4,265,585, Cl. 414-541.000.

Hawkins, William J.: *See—*
Fraser, Daniel M.; Hausner, John E.; Hawkins, William J.; and Comiskey, Frederick K., 4,266,106, Cl. 200-61.440.

Hayakawa, Shuzo: *See—*
Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, 4,265,816, Cl. 260-239.55C.

Hayakawa, Yoshihiro: *See*—
Kaneko, Yoshio; Yamauchi, Makoto; Shiozawa, Shinji; Hayakawa, Yoshihiro; and Banba, Fumio, 4,265,288, Cl. 152-209.00R.
Hayakawa, Yoshiichi: *See*—
Uda, Masayuki; and Hayakawa, Yoshiichi, 4,266,158, Cl. 313-325.000.
Hayashi, Shigeki; and Okamoto, Takemitsu, to Nusco Kabushiki Kaisha. Cutting control apparatus. 4,266,276, Cl. 364-475.000.
Hayashi, Yuzuru: *See*—
Kawaguchi, Takeyuki; Taketani, Yutaka; Hayashi, Yuzuru; Ono, Tomoyoshi; and Mori, Koh, 4,265,745, Cl. 210-654.000.
Hayashida, Takanori, to Yamaha Hatsukoki Kabushiki Kaisha. Induction system of four stroke internal combustion engine. 4,265,207, Cl. 123-432.000.
Hayes, Thomas H.; and Lo Maglio, Lewis C., to Ethyl Corporation. Collapsible dispensing tube. 4,265,948, Cl. 428-35.000.
Hayssen Manufacturing Company: *See*—
Mainberger, Walter A.; and Gerritsen, Adrian, 4,265,070, Cl. 53-433.000.
Heaney, James J., to Anthony's Manufacturing Company, Inc. Method of forming frangible door containers. 4,265,069, Cl. 53-399.000.
Heartland Chemicals: *See*—
Duwell, Michael J.; and Specht, Paul B., 4,265,584, Cl. 414-412.000.
Hebenstreit, Ernst: *See*—
Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,266,205, Cl. 333-165.000.
Heckele, Helmut, to Richard Wolf GmbH. Holders for medical apparatus. 4,265,561, Cl. 403-3.000.
Heckethorn, John E., to Heckethorn Manufacturing Company. U-Bolt clamp saddle construction. 4,265,005, Cl. 24-277.000.
Heckethorn Manufacturing Company: *See*—
Heckethorn, John E., 4,265,005, Cl. 24-277.000.
Hedges, James H.; and Glinsmann, Gilbert R., to Phillips Petroleum Company. Oil recovery method using unique salinity for oil recovery surfactant system. 4,265,308, Cl. 166-252.000.
Hee, Wong: *See*—
Hobrecht, Stephen W.; Skawinski, Henry M.; Chiu, Kh; and Hee, Wong, 4,266,254, Cl. 360-62.000.
Heffner, Clifton W.: *See*—
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,265,074, Cl. 53-551.000.
Heine, David R.: *See*—
Denton, Medona B.; Windsor, David L.; and Heine, David R., 4,266,113, Cl. 219-121.0PQ.
Heinzl, Joachim; and Kattner, Erich, to Siemens Aktiengesellschaft. Arrangement for the optoelectrical scanning of a master. 4,266,250, Cl. 358-285.000.
Heinzl, Joachim; Schlossbauer, Hubert; Miller, Heide-Marie; and Uhden, Irene, to Siemens Aktiengesellschaft. Method for storing serial data on a recording carrier. 4,266,280, Cl. 364-900.000.
Heller, Laszlo; Forgo, Laszlo; Papp, Istvan; Bodas, Janos; Kovacs, Gyula; and Laszlo, Karoly, to Transelektro Magyar Villamossagi Kulkereskedelmi Vallalat. Internal fin tube heat exchanger. 4,265,275, Cl. 138-38.000.
Helms, Adolf, to Hauni-Werke Korber & Co. KG. Method and machine for processing webs of cigarette paper or the like. 4,265,255, Cl. 131-69.000.
Henderson, Drew: *See*—
Desai, Mahendrakumar D.; and Henderson, Drew, 4,265,371, Cl. 222-70.000.
Henderson's Industries Limited: *See*—
Park, Ronald S., 4,266,042, Cl. 521-123.000.
Hendrickson, Thomas E., to Honeywell Inc. Semiconductor apparatus. 4,266,237, Cl. 357-41.000.
Henle, Robert A.; and Johnson, Alfred H., to International Business Machines Corporation. Vertical semiconductor integrated circuit chip packaging. 4,266,282, Cl. 365-52.000.
Hennig, Michael F.: *See*—
Reiner, Lawrence L.; Marra, Michael; and Hennig, Michael F., 4,265,449, Cl. 273-41.000.
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., to Zoecon Corporation; and Imperial Chemical Industries Limited. Phenyl uracils. 4,266,056, Cl. 544-311.000.
Herbst, Heiner; Pfleiderer, Hans-Jorg; Koch, Rudolf; and Tihanyi, Jeno, to Siemens Aktiengesellschaft. Optoelectronic sensor according to the principle of carrier injection. 4,266,235, Cl. 357-30.000.
Herchenbach, Horst: *See*—
Brachthauser, Kunibert; and Herchenbach, Horst, 4,265,670, Cl. 106-100.000.
Hercules Incorporated: *See*—
Breslow, David S., 4,265,807, Cl. 260-97.500.
Hughes, Norman E.; and Scheve, Bernard J., 4,266,007, Cl. 430-306.000.
Hermann Berstorff Maschinenbau GmbH: *See*—
Martin, Gerhard, 4,265,547, Cl. 366-79.000.
Hermann Screens Manufacturing Company (Proprietary) Limited: *See*—
Bucker, Fritz O.; and Lambrecht, Henning F. W. M. A., 4,265,742, Cl. 209-399.000.
Herr, John A.; and Jaffe, Wolfgang, to Singer Company, The. Method of and apparatus for cooling electric motors and totally enclosed electric motors incorporating same. 4,266,152, Cl. 310-59.000.
Herrmann, Robert P.; Pease, Floyd T.; and Ray, Donald R., to Offshore Company, The. Gravity base, jack-up platform - method and apparatus. 4,265,568, Cl. 405-196.000.
Herrnring, Gunther; and Nussen, Klaus P., to Montblanc-Simplo GmbH. Aluminum plating cell. 4,265,726, Cl. 204-202.000.
Herskovitz, Sheldon B.; Martin, Jay; and Stiglitz, Martin R., to Solar Energy Technology, Inc. Electrically heated endodontic syringe for injecting thermoplastic material into a root canal cavity. 4,265,618, Cl. 433-32.000.
Herwegh, Norbert: *See*—
Berger, Ernst; and Herwegh, Norbert, 4,265,225, Cl. 126-445.000.
Hesse, Anton; Lechtken, Peter; Nicolaus, Walter; and Scholz, Dankmar, to BASF Aktiengesellschaft. Photocurable molding, impregnating and coating compositions. 4,265,723, Cl. 204-159.230.
Hestermann, Klaus: *See*—
Gohla, Werner; Hestermann, Klaus; Kandler, Joachim; Wasel-Nielen, Horst-Dieter; Sommer, Klaus; Rohlfs, Hans-Adolf; and Merkenich, Karl, 4,265,776, Cl. 252-98.000.
Hetherington, Brian L., to Du Pont Canada, Inc. Process for producing a heat-weakened strip in polyolefin film. 4,265,616, Cl. 432-8.000.
Hetz, Heinz K., to Yarway Corporation. Modulating flow control valve assembly. 4,265,268, Cl. 137-117.000.
Heu, Ferdinand: *See*—
Saischek, Gerald; Wegleitner, Karlheinz; Heu, Ferdinand; and Wohlmuth, Roman, 4,265,664, Cl. 106-18.130.
Hewlett-Packard Company: *See*—
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Hibbard, George A., to Joy Manufacturing Company. Rock drill. 4,265,321, Cl. 173-78.000.
Hickey, Albert A.: *See*—
Rowell, Robert; and Hickey, Albert A., 4,265,333, Cl. 182-92.000.
Higgins, Wayne G. Markers for electric fences. 4,265,195, Cl. 116-209.000.
Higuchi, Masahiro: *See*—
Morishita, Sadao; Okumura, Fumio; and Higuchi, Masahiro, 4,265,978, Cl. 428-537.000.
Hill, Alvin J., to Eastern Associated Coal Corp. Capsule apparatus for transporting a disabled person. 4,265,353, Cl. 198-321.000.
Hill, Robert W.: *See*—
Pelser, Robert J.; Pelser, Lewis M.; Hill, Robert W.; Brown, Sanford W.; and Fischer, Robert G., 4,265,680, Cl. 148-103.000.
Hill, Roger C., to Johnson & Johnson. Stoma adaptor. 4,265,244, Cl. 128-283.000.
Hills, Robert A. Manual stock feeder. 4,265,385, Cl. 226-127.000.
Hillstead, David P.: *See*—
Neff, Robert K.; and Hillstead, David P., 4,265,182, Cl. 105-197.00D.
Hilti Aktiengesellschaft: *See*—
Lippacher, Wolfgang; and Teger, Gerhard, 4,265,008, Cl. 29-240.000.
Hinden, Milton, to Duro Dyne Corporation. Insulation support fixture and method of making the same. 4,264,995, Cl. 10-1.00R.
Hines, Kenneth W., to Motorola, Inc. Memory system for a Doppler radar incorporating a fast Fourier transform computer. 4,266,279, Cl. 364-726.000.
Hinze, Kenneth J., to Dow Chemical Company, The. Stabilization of polyether polyols and polyurethane foams prepared therefrom. 4,265,783, Cl. 252-182.000.
Hirai, Masahide: *See*—
Uejima, Hiroyuki; Hirai, Masahide; and Sakaida, Tsutomu, 4,266,045, Cl. 528-161.000.
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member and process for production thereof. 4,265,991, Cl. 430-64.000.
Hirakawa, Manabu: *See*—
Sano, Takezo; Shimomura, Takatoshi; Murase, Ichiki; and Hirakawa, Manabu, 4,265,959, Cl. 428-216.000.
Hirakawa, Yukio: *See*—
Miyagaki, Katsunori; Noguchi, Shozo; and Hirakawa, Yukio, 4,266,239, Cl. 357-84.000.
Hirakura, Koji; Sawada, Yasuo; and Watase, Kenta, to Ricoh Company, Ltd. Toner developing ability measuring system for electrostatography. 4,266,141, Cl. 250-564.000.
Hirano, Masachika: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,266,074, Cl. 560-105.000.
Hirano, Shigeo: *See*—
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Hirose, Masahiko; and Akai, Yoshimi, to Tokyo Shibaura Denki K.K. Surface treating apparatus utilizing plasma generated by microwave discharge. 4,265,730, Cl. 204-298.000.
Hirose, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Receipt slip issuing apparatus. 4,266,121, Cl. 235-381.000.
Hitachi, Ltd.: *See*—
Kato, Katsuhiko; and Kojima, Tosaku, 4,266,256, Cl. 360-128.000.
Kawazoe, Kazuyoshi; Takata, Yoshinori; Suzuki, Mon; and Uehara, Shizuo, 4,266,196, Cl. 324-464.000.
Seki, Masatoshi, 4,265,685, Cl. 148-174.000.
Hitachi Metals, Ltd.: *See*—
Kawanishi, Tsuneaki; Mukoh, Akio; and Morishita, Hirosada, 4,265,993, Cl. 430-107.000.
Hitco: *See*—
Beckley, Don A., 4,265,727, Cl. 204-242.000.

Hjortzberg, Bernhard A., to BASF Aktiengesellschaft. Color signal encoding methods and apparatus for video recording and playback. 4,266,241, Cl. 358-4.000.
Hlavka, Lloyd F., to Varian Associates, Inc. Sensor for VT probes. 4,266,194, Cl. 324-315.000.
Hobbs, James W., to Phillips Petroleum Company. Non-linear level controller. 4,265,263, Cl. 137-2.000.
Hobrecht, Stephen W.; Skawinski, Henry M.; Chiu, Kh; and Hee, Wong, to National Semiconductor Corp. Integrated circuit for recording and playback of such recording. 4,266,254, Cl. 360-62.000.
Hoechst Aktiengesellschaft: *See*—
Buhr, Gerhard; and Ruckert, Hans, 4,266,001, Cl. 430-192.000.
Debus, Gerhard; Girg, Friedrich; and Knittel, Volker, 4,265,674, Cl. 106-314.000.
Gohla, Werner; Hestermann, Klaus; Kandler, Joachim; Wasel-Nielen, Horst-Dieter; Sommer, Klaus; Rohlfs, Hans-Adolf; and Merkenich, Karl, 4,265,776, Cl. 252-98.000.
Legutke, Gunter; Scholz, Harald; and Schuchardt, Kurt, 4,265,837, Cl. 570-243.000.
Munster, Gerhard; Riess, Gerhard; and Russow, Jurgen, 4,265,865, Cl. 423-300.000.
Papenfuhs, Theodor; and Teige, Wolfgang, 4,265,632, Cl. 8-512.000.
Schell, Loni, 4,265,999, Cl. 430-189.000.
Spielmann, Werner; and Schaeffer, Georg, 4,266,066, Cl. 549-64.000.
Stahlhofen, Paul; and Erdmann, Fritz, 4,266,000, Cl. 430-192.000.
Uhlig, Fritz; and Wehlmnn, Kurt A., 4,266,006, Cl. 430-300.000.
Wortmann, Joachim; Rieb, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, 4,265,854, Cl. 422-40.000.
Hoeka Sierpleisters En Muurverven B.V.: *See*—
Blom, Cornelis W.; and van Keulen, Jacobus M., 4,265,958, Cl. 428-166.000.
Hoenow, Klaus-Werner: *See*—
Hallbauer, Hans-Dieter; Gast, Fritz G. H.; Hoenow, Klaus-Werner; and Rahn, Armin, 4,265,109, Cl. 73-862.230.
Hoffman, Douglas L. Collet chuck aligning assembly for gem faceting machines. 4,265,057, Cl. 51-229.000.
Hoffmann, Kurt; and Ernst, Roland, to Siemens Aktiengesellschaft. Semiconductor circuit with at least two field effect transistors united in a semiconductor crystal. 4,266,151, Cl. 307-297.000.
Hoffmann-La Roche Inc.: *See*—
Chan, Ka-Kong; and Pawson, Beverly A., 4,266,073, Cl. 560-55.000.
Daum, Adam; Fernex, Michel; and Wick, Alexander E., 4,265,893, Cl. 424-246.000.
Hoffmann, Ralph L., to Perfection Manufacturing Company, The. Rigid grass catcher. 4,265,079, Cl. 56-202.000.
Hoke, Kenneth E.: *See*—
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,265,578, Cl. 414-130.000.
Holcomb, Normand P.: *See*—
Stone, Frederick A.; and Holcomb, Normand P., 4,265,305, Cl. 166-113.000.
Holden, Kenneth G.; and Kaiser, Carl, to SmithKline Corporation. 6-Phenyl thio- and 6-cyclohexyl thio-2,3,4,5-tetrahydro-1H-3-benzazepines. 4,265,890, Cl. 424-244.000.
Holding, Trevor J.: *See*—
Pace, Gary W.; and Holding, Trevor J., 4,265,673, Cl. 106-177.000.
Hollett, Ronald C.: *See*—
Bucy, Raymond W., Jr.; Gallardo, Vicente C., Jr.; Hollett, Ronald C.; and Young, Eric A., 4,265,595, Cl. 416-220.00R.
Hollyday, Robert D., to AMP Incorporated. Filtered connector assembly. 4,265,506, Cl. 339-147.00R.
Holmes, Howard H., to Textron, Inc. Sliding valve assembly for use in gas meters or the like. 4,265,113, Cl. 73-266.000.
Holset Engineering Company Limited: *See*—
Atkin, Howard S., 4,265,456, Cl. 277-95.000.
Holsopple, Dale B.; Kurple, Wasyl W.; Kurple, William M.; and Kurple, Kenneth R. Method of making epoxide-lignin resins. 4,265,809, Cl. 260-124.00R.
Holzler, Georg; and Knoche, Jochem, to Siemens Aktiengesellschaft. Electromechanical control device for displacing an object. 4,266,169, Cl. 318-490.000.
Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Compositions including mercaptoorganopolysiloxanes and stannic salts of carboxylic acids. 4,265,792, Cl. 260-18.00S.
Honeywell Inc.: *See*—
Hendrickson, Thomas E., 4,266,237, Cl. 357-41.000.
Stuhr, Leslie P., 4,265,115, Cl. 73-349.000.
Honeywell Information Systems, Inc.: *See*—
Panepinto, William, Jr., 4,266,285, Cl. 365-189.000.
Hons-Olivier, Jacques P.; Le Thanh, Tri; and Devanz, Francois M., to Impervia, Societe d'Etudes et de Realisations. Fireproof elastic packing material. 4,266,039, Cl. 521-85.000.
Hope, Ned A.: *See*—
Johnson, Kenneth O.; Fogg, Harold E.; and Hope, Ned A., 4,265,099, Cl. 64-13.000.
Hopkins, Donald L., to Alf Hannaford & Co. Pty. Ltd. Method and apparatus to assist in provoking forward movement of animals. 4,265,199, Cl. 119-29.000.
Hopkins, Richard H.: *See*—
Blaugher, Richard D.; and Hopkins, Richard H., 4,265,683, Cl. 148-120.000.
Hoppner, Dietrich; and Kohlbacher, Gerhard, to Licentia Patent-Verwaltungs-G.m.b.H. Monolithically integrated semiconductor circuit. 4,266,100, Cl. 179-18.0GF.
Hori, Kiyotaka: *See*—
Nagatomo, Shigeru; and Hori, Kiyotaka, 4,266,010, Cl. 430-355.000.
Horike, Akihiro: *See*—
Imanaka, Yoshihiko; Nakamatsu, Hiroshi; Horike, Akihiro; Saito, Yoichi; and Iwata, Kaoru, 4,266,053, Cl. 544-196.000.
Horinek, Herbert J.: *See*—
Kierbow, Gerald C.; Tomlinson, Harvard L.; Horinek, Herbert J.; and Crain, Stephen F., 4,265,266, Cl. 137-101.190.
Horio, Motohiko: *See*—
Furusawa, Motoyoshi; Horio, Motohiko; Togashi, Shyuichi; and Ohmiya, Akio, 4,265,412, Cl. 242-71.400.
Hornbeck, Larry J.; and Hosack, Harold H., to Texas Instruments Incorporated. Parallel readout stratified channel CCD. 4,266,234, Cl. 357-24.000.
Horrell, Charles I. Device for sharpening lawn mower blades. 4,265,146, Cl. 76-82.100.
Horstmann, Harald; Meng, Karl-August, deceased (by Meng, Ilse Heide Frieda, legal representative); by Meng, Matthias, legal representative; Seuter, Friedel; and Moller, Eike, to Bayer Aktiengesellschaft. Imidazo[2,1-b]-[1,3,4]-thiadiazole compounds, composition and their medicinal use. 4,265,898, Cl. 424-270.000.
Horwitz, Jerome P.; Neenan, John P.; Misra, Radhey S.; Rozhin, Jurij; Huo, Anne; and Philips, Kerstin D., deceased (by Philips, J. Christopher, administrator), to United States of America, Health, Education and Welfare. Synthesis of analogs of 3'-phosphoadenosine 5'-phosphosulfate (PAPS). 4,266,048, Cl. 536-27.000.
Hosack, Harold H.: *See*—
Hornbeck, Larry J.; and Hosack, Harold H., 4,266,234, Cl. 357-24.000.
Hoshino, Yasushi: *See*—
Tateishi, Kazuyoshi; Hoshino, Yasushi; and Takano, Rikuo, 4,265,989, Cl. 430-57.000.
Hosiden Electronics Co., Ltd.: *See*—
Uda, Masayuki; and Hayakawa, Yoshiichi, 4,266,158, Cl. 313-325.000.
Hosken, James C. Magnetic fastening means. 4,265,002, Cl. 24-201.00B.
Hosokawa, Shuji: *See*—
Tanaka, Tamotsu; Kato, Michio; Uematsu, Masataka; Nishida, Yoshikazu; and Hosokawa, Shuji, 4,265,320, Cl. 173-12.000.
Hospital and Welfare Board of Hillsborough County, The: *See*—
Ruge, Walter, 4,265,227, Cl. 128-23.000.
Hotine, William. Fluent material level control system. 4,265,262, Cl. 137-2.000.
Hou, Ching-Tsang: *See*—
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,266,034, Cl. 435-253.000.
Howard, Thomas J., Jr.: *See*—
Schrock, Martin O.; Howard, Thomas J., Jr.; and Jinkins, Danny R., 4,265,018, Cl. 30-276.000.
Howell, Edward K., to General Electric Company. Long-time and short-time overcurrent signal processor for circuit breaker static trip units. 4,266,259, Cl. 361-97.000.
Hoyt, Hazen L., 4th; and Uhr, Daniel R., Jr., to Pfizer Inc. Manganese micronutrient solutions. 4,265,653, Cl. 71-11.000.
Huang, Max W., to Rust Engineering Company, The. Biomass liquefaction process. 4,266,083, Cl. 585-240.000.
Huber, Harold H.: *See*—
Flaherty, Louis W.; and Huber, Harold H., 4,265,217, Cl. 126-288.000.
Huffy Corporation: *See*—
Bianco, Andrew S., 4,265,378, Cl. 222-539.000.
Hughes Aircraft Company: *See*—
Cook, Lacy G., 4,265,510, Cl. 350-55.000.
Ladd, Glenn O., Jr., 4,265,934, Cl. 427-84.000.
Peters, John W.; and Gebhart, Frank L., 4,265,932, Cl. 427-53.100.
Hughes, Norman E.; and Scheve, Bernard J., to Hercules Incorporated. Multilayer printing plates and process for making same. 4,266,007, Cl. 430-306.000.
Humes Limited: *See*—
Jordon, John V. W., 4,265,400, Cl. 238-14.400.
Hunt & Moscrop (Textile Machinery) Limited: *See*—
Gasse, Robert W., 4,265,533, Cl. 355-110.000.
Hunt, Peter; and Trelford, Aston M., to Kirby Pharmaceuticals Ltd. Tabletting process. 4,265,847, Cl. 264-122.000.
Hunter Douglas International N.V.: *See*—
Vecchiarelli, Francis, 4,265,423, Cl. 248-264.000.
Hunter, Edwin J., to Toro Company, The. Support structure for traveling sprinkler. 4,265,404, Cl. 239-186.000.
Hunter, Lee. Vehicle wheel alignment diagnosing apparatus. 4,265,537, Cl. 356-155.000.
Huo, Anne: *See*—
Horwitz, Jerome P.; Neenan, John P.; Misra, Radhey S.; Rozhin, Jurij; Huo, Anne; and Philips, Kerstin D., deceased, 4,266,048, Cl. 536-27.000.
Hurley, Byron H.; and Ricks, Walter G. Labeling apparatus. 4,265,695, Cl. 156-285.000.
Hyde, Bill J.: *See*—
Greenlee, Donald R.; and Hyde, Bill J., 4,265,459, Cl. 277-212.00C.
I.S.C. Smelting: *See*—
Gammon, Michael W., 4,265,644, Cl. 55-257.0NP.

Ichihashi, Hiroo: *See*—
Shinohara, Yukimasa; and Ichihashi, Hiroo, 4,265,198, Cl. 118-695.000.
Ichiyanagi, Toshikazu: *See*—
Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,265,521, Cl. 354-23.00D.
Ida, Hideaki: *See*—
Banno, Taiichi; and Ida, Hideaki, 4,265,544, Cl. 356-427.000.
Idelson, Elbert M., to Polaroid Corporation. Novel azo dyes. 4,265,811, Cl. 260-147.000.
Iida, Masaaki; Kato, Chihiro; Ohshima, Shigemitsu; and Yazawa, Yoshiyuki, to Ajinomoto Company, Incorporated. Method for fractionating an oil or fat to separate the high melting point components thereof. 4,265,826, Cl. 260-428.000.
Iida Sankyo Co., Ltd.: *See*—
Obata, Katsuhiro; and Koizumi, Shigenobu, 4,266,291, Cl. 368-168.000.
IIT Research Institute: *See*—
Camras, Marvin, 4,266,255, Cl. 360-90.000.
Iizawa, Osamu: *See*—
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; and Tanaka, Hitoshi, 4,265,668, Cl. 106-73.300.
Iizuka, Hiromichi: *See*—
Maeda, Eizo; and Iizuka, Hiromichi, 4,265,164, Cl. 91-417.00R.
Ikeda Bussan Co. Ltd.: *See*—
Nishimura, Shinichi; and Izumida, Satoshi, 4,265,482, Cl. 297-391.000.
Ikeda, Tadashi; Sakai, Takeo; Takei, Haruo; and Inoue, Noriyuki, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsions. 4,266,003, Cl. 430-264.000.
Ikeda, Yoshirou; and Kaite, Yoshikazu, to Nippon Sheet Glass Co., Ltd. Step-type light-transmitting body having excellent water resistance. 4,265,667, Cl. 106-47.00Q.
ILC Technology, Inc.: *See*—
Juvan, Christian H. A., 4,266,180, Cl. 322-4.000.
Im, Chang J. Apparatus and method for separating diverse particles of a slurry. 4,265,741, Cl. 209-211.000.
Imafuku, Shigehisa: *See*—
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Imafuku, Shigehisa, 4,265,864, Cl. 423-121.000.
Imagawa, Takashi: *See*—
Kagitani, Yoshio; Imagawa, Takashi; Inahara, Hirohisa; and Watanabe, Ryozo, 4,265,888, Cl. 424-233.000.
Imamura, Junji, to Mitsuboshi Belting Ltd. Power transmission belt. 4,265,627, Cl. 474-267.000.
Imanaka, Yoshihiko; Nakamatsu, Hiroshi; Horike, Akihiro; Saito, Yoichi; and Iwata, Kaoru, to Teijin Limited. Melamine group-containing (meth)acrylate. 4,266,053, Cl. 544-196.000.
IMED Corporation: *See*—
Jenkins, Jon A., 4,265,240, Cl. 128-214.00E.
Impact International Pty. Limited: *See*—
Lajovic, Dimitri E.; and Lassner, Hans, 4,265,432, Cl. 266-220.000.
Imperial Chemical Industries Limited: *See*—
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,266,056, Cl. 544-311.000.
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., 4,265,406, Cl. 241-16.000.
Impervia, Societe d'Etudes et de Realisations: *See*—
Hons-Olivier, Jacques P.; Le Thanh, Tri; and Devanz, Francois M., 4,266,039, Cl. 521-85.000.
Inahara, Hirohisa: *See*—
Kagitani, Yoshio; Imagawa, Takashi; Inahara, Hirohisa; and Watanabe, Ryozo, 4,265,888, Cl. 424-233.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Berton, Marcello; and Ceccarelli, Pietro, 4,265,500, Cl. 312-107.000.
Donnis, Gian P.; and Borca, Giancarlo C., 4,265,550, Cl. 400-196.100.
Ingersoll-Rand Company: *See*—
Luthi, Oscar, 4,265,740, Cl. 209-211.000.
Inman, Richard V.: *See*—
Morris, Winfred L.; Inman, Richard V.; and Buck, Otto, 4,265,120, Cl. 73-600.000.
Inoue-Japax Research Incorporated: *See*—
Inoue, Kiyoshi, 4,266,170, Cl. 318-565.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Safety arrangement for NC systems. 4,266,170, Cl. 318-565.000.
Inoue, Noriyuki: *See*—
Ikeda, Tadashi; Sakai, Takeo; Takei, Haruo; and Inoue, Noriyuki, 4,266,003, Cl. 430-264.000.
Inoue, Takehisa: *See*—
Ebitani, Atsushi; Inoue, Takehisa; and Tsunoi, Kazuo, 4,265,788, Cl. 252-455.00Z.
Inoue, Teruo, to Toyo Rubber Industry Co., Ltd., The. Radial tires. 4,265,292, Cl. 152-354.00R.
Inoue, Tomohiro; and Masuzawa, Sigeaki, to Sharp Kabushiki Kaisha. Audible output device for talking timepieces, talking calculators and the like. 4,266,096, Cl. 179-1.50M.
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, to Nippon Kasei Chemical Co., Ltd. Tris(3-acetylthiopropyl)isocyanurate and preparation thereof. 4,266,055, Cl. 544-221.000.
Inouye, Kozo: *See*—
Kobayashi, Hidetoshi; Tanaka, Mitsugu; Inouye, Kozo; and Naito, Hideki, 4,266,019, Cl. 430-551.000.
Inouye, Shigeharu: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,265,654, Cl. 71-86.000.
Institut Francais du Petrole: *See*—
Arnaudeau, Marcel, 4,265,313, Cl. 166-366.000.
Institutul De Cercetari Si Proiectari Tehnologice In Transporturi: *See*—
Scorteanu, Ionel R., 4,265,419, Cl. 246-247.000.
Instrumentarium OY: *See*—
Ahjopalo, Hannu; and Auvinen, Jorma J., 4,266,131, Cl. 250-341.000.
Intec Corporation: *See*—
Slaker, Frank A., 4,265,545, Cl. 356-431.000.
Intel Corporation: *See*—
Perlegos, George; and Johnson, William S., 4,266,283, Cl. 365-104.000.
Intermedicat GmbH: *See*—
Braun, Bernd, 4,265,928, Cl. 427-2.000.
Griesel, Karl-Heinz, 4,265,118, Cl. 73-427.000.
International Business Machines Corporation: *See*—
Aakalu, Nandakumar G.; and Rittmiller, Lawrence A., 4,265,775, Cl. 252-573.000.
Barclay, Donald J.; and Prowting, Christopher T., 4,265,543, Cl. 356-369.000.
Barkley, John A., 4,265,998, Cl. 430-125.000.
Bemis, John D.; and Goff, Willie, Jr., 4,265,552, Cl. 400-236.000.
Berglund, Neil C.; and Kempke, William G., 4,266,272, Cl. 364-200.000.
Clancy, Douglas E.; Johnson, Carl F.; McCray, William R.; and Neal, Danny M., 4,265,554, Cl. 400-316.000.
Drago, Gary A.; Mix, Arthur L., Jr.; and Ritchie, Robert T., 4,266,231, Cl. 346-75.000.
Henle, Robert A.; and Johnson, Alfred H., 4,266,282, Cl. 365-52.000.
Juliana, Anthony, Jr.; Koepcke, Richard W.; Mills, Ross N.; and Talke, Frank E., 4,266,232, Cl. 346-140.00R.
Krieg, Michael L.; and Quinn, Paul A., Jr., 4,265,556, Cl. 400-342.000.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,265,923, Cl. 426-538.000.
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,265,818, Cl. 260-345.200.
Wiegers, Wilhelmus J.; and Hall, John B., 4,265,836, Cl. 570-230.000.
International Harvester Company: *See*—
Oshel, J. Bryan; and Bennett, Robert J., 4,265,588, Cl. 414-786.000.
International Power Technology, Inc.: *See*—
Cheng, Dah Y., 4,265,713, Cl. 203-10.000.
International Standard Electric Corporation: *See*—
Dobler, Karl-Ulrich; Mura, Sigurd; and Kraft, Erhard, 4,266,273, Cl. 364-426.000.
International Telephone and Telegraph Corporation: *See*—
Bowman, Jeffrey M., 4,265,141, Cl. 74-516.000.
Burns, Edgar, 4,265,504, Cl. 339-97.00R.
Kao, Charles K., 4,265,515, Cl. 350-96.330.
Perrotti, Emmanuel J., 4,266,228, Cl. 343-771.000.
Steensma, Peter D.; Haussmann, Robert H.; and Polcer, Anton J., 4,266,183, Cl. 324-52.000.
Inveresk Research International: *See*—
Byrne, Geoffry A.; and Aylott, Ross I., 4,265,875, Cl. 424-19.000.
Ipsen, Peter G., to General Electric Company. Pipe elbow connection. 4,265,472, Cl. 285-179.000.
Iriguchi, Norio: *See*—
Boretos, John W.; and Iriguchi, Norio, 4,265,694, Cl. 156-242.000.
Ishigaki, Yukinobu, to Victor Company of Japan, Limited. Multipath distortion compensation circuit and method. 4,266,296, Cl. 455-303.000.
Ishiguro, Shoji; Shishido, Tadao; Sakai, Takeo; Sasaki, Noboru; Nagaoka, Joji; and Matsuki, Minoru, to Fuji Photo Film Co., Ltd. Silver halide photographic emulsions. 4,266,018, Cl. 430-550.000.
Ishihara, Kanji, to Tokico Ltd. Disc brake. 4,265,339, Cl. 188-72.500.
Ishihara Sangyo Kaisha Ltd.: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,266,064, Cl. 546-345.000.
Ishikawa, Ro: *See*—
Matsushita, Shigeo; Ishikawa, Ro; Kaede, Kazuhisa; Mito, Ikuo; and Sugimoto, Shigetoki, 4,265,513, Cl. 350-96.200.
Ishizawa, Akio: *See*—
Fujimori, Yoshinori; Ishizawa, Akio; and Hashimoto, Minoru, 4,265,841, Cl. 264-22.000.
Isola, Raymond O. Cartridge retriever mounting and attaching device for a colt M-16 rifle. 4,265,042, Cl. 42-1.00T.
Isotronics, Incorporated: *See*—
Scherer, Jeremy D., 4,266,089, Cl. 174-52.0FP.
Scherer, Jeremy D., 4,266,090, Cl. 174-52.0FP.
Issenmann, Olivier, to Compagnie Geofinanciere. Chromatographic analysis of gaseous matter. 4,266,277, Cl. 364-498.000.
Itaya, Nobushige: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,266,074, Cl. 560-105.000.

Kasamatsu, Kiyoshi; Ohsumi, Tadashi; Itaya, Nobushige; Ohno, Nobuo; and Kato, Takashi, 4,265,906, Cl. 424-304.000.

Ito, Kazuichi. Rotary pump with wedge roller eccentric means driving the rotor. 4,265,605, Cl. 418-63.000.

Ito, Shohei, to Seiko Seiki Kabushiki Kaisha. Internal grinding machine. 4,265,054, Cl. 51-5.00D.

Itoh, Katsumi: *See—*
Muto, Katsuya; Mori, Kazumasa; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,266,181, Cl. 322-28.000.

Itoh, Yasuo, to Victor Company of Japan, Limited. System for detecting the initial point of a digital signal in a composite digital signal reproducing system. 4,266,244, Cl. 358-142.000.

ITT Industries, Inc.: *See—*
Burgdorf, Jochen, 4,265,490, Cl. 303-6.00C.
Pitt, Gillies D., 4,265,535, Cl. 356-70.000.
Renschke, Joachim, 4,266,213, Cl. 340-166.00R.

Iura, Yukio: *See—*
Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,265,521, Cl. 354-23.00D.

Ivanoff, Alexander. Device for removing oil slicks. 4,265,757, Cl. 210-242.300.

Ives, Frank E.; and Saurwein, Albert C., to Venus Products, Inc. Automated parking system and subassemblies therefor. 4,265,581, Cl. 414-228.000.

Iwasaki, Hiroshi: *See—*
Mizuno, Kenichi; Iwasaki, Hiroshi; and Nambu, Hirohiko, 4,266,081, Cl. 568-578.000.

Iwashita, Tomonori: *See—*
Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,265,521, Cl. 354-23.00D.

Iwata, Kaoru: *See—*
Imanaka, Yoshihiko; Nakamatsu, Hiroshi; Horike, Akihiro; Saito, Yoichi; and Iwata, Kaoru, 4,266,053, Cl. 544-196.000.

Izard, David G.: *See—*
Baehr, Donald O.; and Izard, David G., 4,265,979, Cl. 428-171.000.

Izumida, Satoshi: *See—*
Nishimura, Shinichi; and Izumida, Satoshi, 4,265,482, Cl. 297-391.000.

J. I. Case Company: *See—*
Seaberg, David H., 4,265,319, Cl. 172-811.000.

J & W Scientific, Incorporated: *See—*
Jennings, Walter G.; Wohleb, Robert H.; and Wohlers, Norman W., 4,265,860, Cl. 422-280.000.

Jablonski, Richard J.; and Kruh, Daniel, to General Electric Company. Novel polymers of olefin terminated prepolymers and amine terminated prepolymers. 4,266,047, Cl. 528-322.000.

Jack, Stanton E.; and Dark, Robert O., to Alcan Research & Development Limited. Retro-reflecting sheet material and method of making same. 4,265,938, Cl. 427-163.000.

Jackson, Bertie, to L. B. Foster Company. Adjustable guard rail structures. 4,265,401, Cl. 238-17.000.

Jackson, Liam R.; Weidner, John P.; Small, William J.; and Martin, James A., to United States of America, National Aeronautics and Space Administration. Orbiter/launch system. 4,265,416, Cl. 244-2.000.

Jackson, William L., to Dunlop Limited. Tire and wheel rim assemblies. 4,265,290, Cl. 152-330.0RF.

Jacoby, George V., to Sperry Rand Corporation. Delay line signal equalizer for magnetic recording signal detection circuits. 4,266,204, Cl. 333-28.00R.

Jacoby, Henry I.: *See—*
Rasmussen, C. Royce; and Jacoby, Henry I., 4,265,900, Cl. 424-273.00R.

Jaffe, Wolfgang: *See—*
Herr, John A.; and Jaffe, Wolfgang, 4,266,152, Cl. 310-59.000.

Jager, Heimo: *See—*
Plockinger, Erwin; Kuhnelt, Gert; Machner, Peter; and Jager, Heimo, 4,265,295, Cl. 164-52.000.

Jan, Gerald, to Ciba-Geigy AG. Process for the production of colored photographic images by the silver dye-bleach process. 4,266,011, Cl. 430-392.000.

Jarvis, Eugene R. Snow handling apparatus. 4,265,475, Cl. 294-54.000.

Jassawalla, Jal S.: *See—*
Portner, Peer M.; and Jassawalla, Jal S., 4,265,241, Cl. 128-260.000.

Jassniker, Kurt, to Sulzer Brothers Limited. Ventilating system for a weaving machine. 4,265,278, Cl. 139-1.00C.

Jean-Claude Berney SA: *See—*
Berney, Jean-Claude, 4,266,288, Cl. 368-28.000.

Jean Walterscheid GmbH: *See—*
Geisthoff, Hubert, 4,265,327, Cl. 180-53.00D.

Jeffrey, Cyril, to Plessey Handel und Investments AG. Methods of joining glass objects. 4,265,689, Cl. 156-73.200.

Jenkins, Jon A., to IMED Corporation. Apparatus for providing a controlled introduction of intravenous fluid to a patient. 4,265,240, Cl. 128-214.00E.

Jenkins, Kenneth A. Motor vehicle dryer stand. 4,265,029, Cl. 34-39.000.

Jenkins Metal Corporation: *See—*
Collins, Walter W., 4,265,017, Cl. 30-162.000.

Jenkins, William A., to Monarch Marking Systems, Inc. Endless printing band and support assembly. 4,265,174, Cl. 101-111.000.

Jennings, Walter G.; Wohleb, Robert H.; and Wohlers, Norman W., to J & W Scientific, Incorporated. High pressure Soxhlet extractor. 4,265,860, Cl. 422-280.000.

Jeno's, Inc.: *See—*
Munter, Arnold M.; and Ahlgren, David W., 4,265,919, Cl. 426-283.000.

Jensen, Phillip C.: *See—*
Marshall, Larry J.; and Jensen, Phillip C., 4,265,216, Cl. 126-263.000.

Jewett, David N., to Energy Materials Corporation. Apparatus for producing semiconductor grade silicon and replenishing the melt of a crystal growth system. 4,265,859, Cl. 422-199.000.

Jinkins, Danny R.: *See—*
Schrock, Martin O.; Howard, Thomas J., Jr.; and Jinkins, Danny R., 4,265,018, Cl. 30-276.000.

Johannesson, Stig-Erik; and Kruk, Stanislaw J., to AB Volvo. Gear selector mechanism for a vehicle gearbox. 4,265,137, Cl. 74-473.00R.

John Zink Company: *See—*
Reed, Robert D.; and Bengston, Merle A., 4,265,611, Cl. 431-3.000.

Johns Hopkins University, The: *See—*
Chubbuck, John G.; and Turner, James T., 4,265,252, Cl. 128-748.000.

Johnson, Alfred H.: *See—*
Henle, Robert A.; and Johnson, Alfred H., 4,266,282, Cl. 365-52.000.

Johnson (Bulsiewicz), Noreen C.: *See—*
Rosegren, Donald R.; Johnson (Bulsiewicz), Noreen C.; and Stevens, Peter, 4,265,715, Cl. 204-46.00R.

Johnson, Carl F.: *See—*
Clancy, Douglas E.; Johnson, Carl F.; McCray, William R.; and Neal, Danny M., 4,265,554, Cl. 400-316.000.

Johnson Controls, Inc.: *See—*
Capel, Denis, 4,266,104, Cl. 200-18.000.
Rudich, George, Jr., 4,266,257, Cl. 361-27.000.

Johnson, David J., to Studio One Services, Inc. Kiosk. 4,265,059, Cl. 52-66.000.

Johnson, Donald L., to Teledyne Industries, Inc. Electrical connector for strip conductors. 4,265,507, Cl. 339-176.0MF.

Johnson, Earl L.; and Beynon, Dell R., Jr. Storm window construction. 4,265,052, Cl. 49-63.000.

Johnson, Edward M., Jr.: *See—*
Nash, Edward M.; and Johnson, Edward M., Jr., 4,265,283, Cl. 144-286.00R.

Johnson, Harold P.: *See—*
Finlayson, James W.; and Johnson, Harold P., 4,265,025, Cl. 33-178.00F.

Johnson, John H.: *See—*
Fields, Joseph E.; and Johnson, John H., 4,265,879, Cl. 424-78.000.

Johnson & Johnson: *See—*
Hill, Roger C., 4,265,244, Cl. 128-283.000.

Johnson & Johnson Baby Products Company: *See—*
Armstrong, David P.; and Verdicchio, Robert J., 4,265,782, Cl. 252-174.190.

Johnson, Kenneth O.; Fogg, Harold E.; and Hope, Ned A., to General Electric Company. Flexible coupling. 4,265,099, Cl. 64-13.000.

Johnson, Paul H.: *See—*
Mills, King L.; and Johnson, Paul H., 4,265,870, Cl. 423-450.000.

Johnson, William S.: *See—*
Perlegos, George; and Johnson, William S., 4,266,283, Cl. 365-104.000.

Johnstone, Richard, to Kearney & Trecker Corporation. Unmanned machining center with tool checking. 4,266,120, Cl. 235-92.0CT.

Jollow, David J.; and Halushka, Perry V. Inhibiting platelet aggregation with substituted acetanilides. 4,265,909, Cl. 424-324.000.

Jon Erlend Glommen: *See—*
Hansen, Kjell, 4,266,114, Cl. 219-132.000.

Jonas, Walter K., to Minnesota Mining and Manufacturing Company. Sheet dispensing device for use with copying machines, and a container for the stack of sheets. 4,265,441, Cl. 271-19.000.

Jones, Howard: *See—*
Shen, Tsung-Ying; and Jones, Howard, 4,265,905, Cl. 424-304.000.

Jones, Kenneth L., to Procter & Gamble Company, The. Antistatic, fabric-softening detergent additive. 4,265,772, Cl. 252-8.600.

Jones, Marvin R., to Cameron Iron Works, Inc. Blowout preventer and improved ram packer structure. 4,265,424, Cl. 251-1.00A.

Jordan, John P.; and Lampkin, Curtis, to Photon Power, Inc. Photovoltaic cell. 4,265,933, Cl. 427-54.100.

Jordon, Donald A. Traction splint. 4,265,230, Cl. 128-87.00R.

Jordon, John V. W., to Humes Limited; and Hamersley Iron Pty. Limited. Concrete sleeper for track circuitry. 4,265,400, Cl. 238-14.400.

Joseloff, Stanley S. Check-out counter. 4,265,335, Cl. 186-63.000.

Joseph, Werner: *See—*
Wagner, Gebhard; and Joseph, Werner, 4,265,929, Cl. 427-33.000.

Joy Manufacturing Company: *See—*
Hibbard, George A., 4,265,321, Cl. 173-78.000.

Judin, Vladimir N.: *See—*
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.

Juergens, Rainer, to Christensen, Inc. Direct bit drive for deep drilling tools. 4,265,323, Cl. 175-107.000.

Juliana, Anthony, Jr.; Koepcke, Richard W.; Mills, Ross N.; and Talke, Frank E., to International Business Machines Corporation. Voltage

modulated drop-on-demand ink jet method and apparatus. 4,266,232, Cl. 346-140.00R.

Jundt, Werner; and Roozenbeek, Herman, to Robert Bosch GmbH. Ignition control system with closure angle independent of residual energy stored in ignition coil. 4,265,204, Cl. 123-418.000.

Juntgen, Harald: *See*—
Gappa, Gunther; Juntgen, Harald; and Klein, Jurgen, 4,265,767, Cl. 210-662.000.

Justrite Manufacturing Company: *See*—
Flider, Frank S., 4,265,375, Cl. 222-189.000.

Jutte, Hans: *See*—
Stuckmann, Dieter; and Jutte, Hans, 4,265,565, Cl. 405-145.000.

Juvan, Christian H. A., to ILC Technology, Inc. Method of and means for high performance direct current electrical pulse generation utilizing mechanical energy storage. 4,266,180, Cl. 322-4.000.

Jyojiki, Masao: *See*—
Tokutomi, Seijiro; Jyojiki, Masao; and Nakamura, Kazuo, 4,265,520, Cl. 354-23.00D.

Kabushiki Kaisha ASAHI Enterprise: *See*—
Maeda, Eizo; and Iizuka, Hiromichi, 4,265,164, Cl. 91-417.00R.

Kabushiki Kaisha Daini Seikosha: *See*—
Nakao, Hideyuki, 4,266,289, Cl. 368-35.000.

Kabushiki Kaisha Sato Kenkyusho: *See*—
Sato, Yo, 4,265,176, Cl. 101-292.000.

Kabushiki Kaisha Suwa Seikosha: *See*—
Asakawa, Tatsushi, 4,266,178, Cl. 320-39.000.
Futami, Yoshinori; and Ota, Tomio, 4,266,290, Cl. 368-76.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kobayashi, Hisao, 4,265,091, Cl. 62-126.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Katagiri, Haruo; Fujikake, Kenji; and Yamada, Katsuhito, 4,265,596, Cl. 416-236.00A.

Kabushikikaisha: *See*—
Yamamoto, Osamu, 4,265,056, Cl. 51-128.000.

Kabushikikaisha Kanagawa Seisakusho: *See*—
Goto, Hajime; Amemiya, Ikuzo; and Nakayama, Masanobu, 4,265,652, Cl. 65-273.000.

Kaede, Kazuhisa: *See*—
Matsushita, Shigeo; Ishikawa, Ro; Kaede, Kazuhisa; Mito, Ikuo; and Sugimoto, Shigetoki, 4,265,513, Cl. 350-96.200.

Kagitani, Yoshio; Imagawa, Takashi; Inahara, Hirohisa; and Watanabe, Ryozo, to Green Cross Corporation, The. Acetylsalicylate powder preparation for injection. 4,265,888, Cl. 424-233.000.

Kai Cutlery Center Company Limited: *See*—
Asano, Tamoru, 4,265,015, Cl. 30-41.000.

Kaiser, Carl: *See*—
Holden, Kenneth G.; and Kaiser, Carl, 4,265,890, Cl. 424-244.000.

Kaite, Yoshikazu: *See*—
Ikeda, Yoshirou; and Kaite, Yoshikazu, 4,265,667, Cl. 106-47.00Q.

Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method of and apparatus for making pitch fiber infusible. 4,265,869, Cl. 423-447.400.

Kamada, Takeshi: *See*—
Hara, Kazuyuki; and Kamada, Takeshi, 4,266,251, Cl. 358-286.000.

Kameya, Toru; Makino, Shinichi; and Tsuruta, Masayuki, to Taiyo Steel Co., Ltd. Method for producing a colored reflective plate having excellent durability and fabricability. 4,265,937, Cl. 427-163.000.

Kameyama, Iwawo: *See*—
Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,265,869, Cl. 423-447.400.

Kamody, John F., to Koppers Company, Inc. Production of carbon monoxide by the gasification of carbonaceous materials. 4,265,868, Cl. 423-415.00A.

Kampel, Marian: *See*—
Dias, Francisco J.; Gupta, Ashok K.; Gyarmati, Erno; Kampel, Marian; Luhleich, Hartmut; Munzer, Rudolf; and Naoumidis, Aristidis, 4,265,843, Cl. 264-57.000.

Kampwirth, Robert T.; Schuller, Ivan K.; and Falco, Charles M., to United States of America, Energy. Method for etching thin films of niobium and niobium-containing compounds for preparing superconductive circuits. 4,266,008, Cl. 430-318.000.

Kanbe, Junichiro: *See*—
Toyono, Tsutomu; Nakamura, Shunji; Kanbe, Junichiro; Tamura, Yasuyuki; and Takahashi, Tohru, 4,265,197, Cl. 118-657.000.

Kandler, Joachim: *See*—
Gohla, Werner; Hestermann, Klaus; Kandler, Joachim; Wasel-Nielen, Horst-Dieter; Sommer, Klaus; Rohlfs, Hans-Adolf; and Merkenich, Karl, 4,265,776, Cl. 252-98.000.
Wortmann, Joachim; Rieb, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, 4,265,854, Cl. 422-40.000.

Kaneko, Yoshio; Yamauchi, Makoto; Shiozawa, Shinji; Hayakawa, Yoshihiro; and Banba, Fumio, to Bridgestone Tire Co., Ltd. Pneumatic safety tire with excellent long-running ability after puncture employing rubber having specifically defined properties for sidewall inserts and tread. 4,265,288, Cl. 152-209.00R.

Kanthal Corporation, The: *See*—
Best, Albert B., 4,266,119, Cl. 219-541.000.

Kao, Charles K., to International Telephone and Telegraph Corporation. Optical fiber waveguide with effective refractive index profile. 4,265,515, Cl. 350-96.330.

Kao, Dai-Hae; and Shieh, Shii-San. Signal device for fishing rods. 4,266,217, Cl. 340-573.000.

Kapany, Narinder S.; and Unterleitner, Fred C. See-through solar collector. 4,265,222, Cl. 126-431.000.

Kaplan, Harold. Blood identification means. 4,265,101, Cl. 70-57.000.

Karasudani, Yasuo. Disc brake assembly with torque absorbing bracket. 4,265,342, Cl. 188-73.600.

Kardash, John J., to Cherry Semiconductor Corporation. Alarm system control circuit. 4,266,218, Cl. 340-628.000.

Karl Lautenschlager KG, Mobelbeschlagfabrik: *See*—
Lautenschlager, Karl, Jr., 4,265,000, Cl. 16-129.000.

Karlin, Richard A.; McDonald, Robert W.; and Comiskey, Gary F., to Sun Electric Corporation. Current measuring apparatus and method. 4,266,189, Cl. 324-117.00H.

Karlsson, Stig A.: *See*—
Billgren, Per A.; and Karlsson, Stig A., 4,265,700, Cl. 159-47.00R.

Karsai, Frank: *See*—
Mandle, Richard M.; Karsai, Frank; and Krautheim, Raymond S., 4,265,855, Cl. 422-65.000.

Karsh, Irving: *See*—
Levy, Avner; and Karsh, Irving, 4,265,386, Cl. 226-190.000.

Kasamatsu, Kiyoshi; Ohsumi, Tadashi; Itaya, Nobushige; Ohno, Nobuo; and Kato, Takashi, to Sumitomo Chemical Company, Limited. Low mammalian toxic and/or low fish toxic insecticides and/or acaricides. 4,265,906, Cl. 424-304.000.

Kasaoka, Katsuyuki: *See*—
Sasaki, Yoshiyuki; and Kasaoka, Katsuyuki, 4,265,082, Cl. 57-207.000.

Kasenga, Anthony F.; and Chenot, Charles F., to GTE Products Corporation. Cool white lamp using a two-component phosphor. 4,266,161, Cl. 313-487.000.

Kassai Kabushikikaisha: *See*—
Kassai, Kenzou, 4,265,466, Cl. 280-648.000.

Kassai, Kenzou, to Kassai Kabushikikaisha. Baby carriage. 4,265,466, Cl. 280-648.000.

Kastening, Bertel: *See*—
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,265,722, Cl. 204-129.600.

Kastner, Josef: *See*—
Haberl, Rainer; and Kastner, Josef, 4,266,263, Cl. 361-283.000.

Katagiri, Haruo; Fujikake, Kenji; and Yamada, Katsuhito, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Axial flow fan with auxiliary blades. 4,265,596, Cl. 416-236.00A.

Kato, Chihiro: *See*—
Iida, Masaaki; Kato, Chihiro; Ohshima, Shigemitsu; and Yazawa, Yoshiyuki, 4,265,826, Cl. 260-428.000.

Kato, Katsuhiko; and Kojima, Tosaku, to Hitachi, Ltd. Cleaner ribbon for magnetic tape. 4,266,256, Cl. 360-128.000.

Kato, Kenichi, to Fuji Photo Optical Co., Ltd.; and Sano Kiko Co., Ltd. Pressure applying rollers for instant photographic cameras and method of producing the same. 4,265,940, Cl. 427-292.000.

Kato, Michio: *See*—
Tanaka, Tamotsu; Kato, Michio; Uematsu, Masataka; Nishida, Yoshikazu; and Hosokawa, Shuji, 4,265,320, Cl. 173-12.000.

Kato, Shigeo: *See*—
Hasegawa, Tetsuo; Kato, Shigeo; and Miyashita, Takeshi, 4,265,994, Cl. 430-107.000.

Kato, Takashi: *See*—
Kasamatsu, Kiyoshi; Ohsumi, Tadashi; Itaya, Nobushige; Ohno, Nobuo; and Kato, Takashi, 4,265,906, Cl. 424-304.000.

Kattner, Erich: *See*—
Heinzl, Joachim; and Kattner, Erich, 4,266,250, Cl. 358-285.000.

Kaufman, Lance R. Positioning means for optically couplable circuit elements. 4,266,140, Cl. 250-551.000.

Kawaguchi, Takeyuki; Taketani, Yutaka; Hayashi, Yuzuru; Ono, Tomoyoshi; and Mori, Koh, to Teijin Limited. Permselective membrane. 4,265,745, Cl. 210-654.000.

Kawamura, Takayuki; Tazaki, Kichiya; Sakakiyama, Takashi; and Hasegawa, Toshio, to Asahi-Dow Limited. Paper coating composition of unsaturated acid and mono-olefin polymerized in the presence of a preformed styrene/butadiene latex. 4,265,977, Cl. 428-511.000.

Kawanishi, Tsuneaki; Mukoh, Akio; and Morishita, Hirosada, to Hitachi Metals, Ltd. Magnetic toner for electrostatic images and transfer copying. 4,265,993, Cl. 430-107.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Uozumi, Yukio, 4,265,180, Cl. 104-247.000.

Kawasaki Steel Corporation: *See*—
Ohashi, Nobuo; Ono, Yutaka; Nohara, Kiyohiko; Shimomura, Junichi; and Miyawaki, Tetsuo, 4,265,679, Cl. 148-12.00E.

Kawasaki, Toshisuke: *See*—
Yamashina, Ikuo; Kawasaki, Toshisuke; and Tsukuda, Michiko, 4,265,881, Cl. 424-106.000.

Kawazoe, Kazuyoshi; Takata, Yoshinori; Suzuki, Mon; and Uehara, Shizuo, to Hitachi, Ltd. Gas detecting means utilizing electric discharge. 4,266,196, Cl. 324-464.000.

Kayabakogyokabushikikaisha: *See*—
Teruyama, Hideo, 4,265,602, Cl. 418-1.000.

Kayalioglu, Inanc; Roman, Vincent G.; and Lewandowski, Ted J., to Northern Telecom Limited. Pulse rejection and duration correction circuit. 4,266,099, Cl. 179-16.0EA.

Kaye, Gordon E., to Duracell International Inc. Battery housing. 4,265,984, Cl. 429-178.000.

Kearney & Trecker Corporation: *See*—
Johnstone, Richard, 4,266,120, Cl. 235-92.0CT.

Keefner, Eugene F.; and Keefner, John R. Water detector. 4,266,195, Cl. 324-439.000.

Keefner, John R.: *See*—
Keefner, Eugene F.; and Keefner, John R., 4,266,195, Cl. 324-439.000.

Keil, Joseph W., to Dow Corning Corporation. Antiperspirant stick compositions. 4,265,878, Cl. 424-68.000.
Keith, W. Louis. Rod holder device. 4,265,046, Cl. 43-21.200.
Kelada, Nabih P.; Lue-Hing, Cecil; and Lordi, David T., to Metropolitan Sanitary District of Greater Chicago, The. In-line distillation system. 4,265,857, Cl. 422-101.000.
Keller, Douglas V., Jr.: *See*—
Smith, Clay D.; and Keller, Douglas V., Jr., 4,265,737, Cl. 209-3.000.
Keller, Rudolf: *See*—
Loutfy, Raouf O.; Keller, Rudolf; and Yao, Neng-Ping, 4,265,716, Cl. 204-67.000.
Kelly, Edward A., to Merrow Machine Company, The. Sewing machine with trimmer drive mechanism. 4,265,191, Cl. 112-288.000.
Kempke, William G.: *See*—
Berglund, Neil C.; and Kempke, William G., 4,266,272, Cl. 364-200.000.
Kendall Company, The: *See*—
Schaar, Charles H., 4,265,234, Cl. 128-156.000.
Taylor, Glenn N., 4,265,243, Cl. 128-275.000.
Kendon Concepts: *See*—
Whinnery, Lewis A., 4,265,221, Cl. 126-422.000.
Kennedy, Bruce A.: *See*—
Durbin, Anthony T.; and Kennedy, Bruce A., 4,265,486, Cl. 299-2.000.
Kern, Roland J., to Monsanto Company. Photoimageable material of polymeric material having organic sulfide and photo-oxidation sensitizer. 4,266,004, Cl. 430-269.000.
Kernforschungsanlage Julich Gesellschaft mit berschrankter Haftung: *See*—
Dias, Francisco J.; Gupta, Ashok K.; Gyarmati, Erno; Kampel, Marian; Luhleich, Hartmut; Munzer, Rudolf; and Naoumidis, Aristidis, 4,265,843, Cl. 264-57.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Faul, Wolfgang; Furst, Leander; and Kastening, Bertel, 4,265,722, Cl. 204-129.600.
Forster, Siegfried; Kleemann, Manfred; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans-Jurgen, 4,265,302, Cl. 165-165.000.
Schwarzer, Klemens, 4,265,707, Cl. 176-37.000.
Kessels, Cornelis P. H., to Oce-van der Grinten N.V. Self-sticking adhesive tape. 4,265,988, Cl. 430-56.000.
Kessler, Richard V.; and Corbeels, Roger J., to Texaco Inc. Method of producing a coal-water slurry of predetermined consistency. 4,265,407, Cl. 241-21.000.
Khodos, Yulian, to Mid-West Conveyor Co., Inc. Article transfer arrangement. 4,265,360, Cl. 198-774.000.
Kierbow, Gerald C.; Tomlinson, Harvard L.; Horinek, Herbert J.; and Crain, Stephen F., to Halliburton Company. Controlled additive metering system. 4,265,266, Cl. 137-101.190.
Kikuchi, Nobuaki: *See*—
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; and Tanaka, Hitoshi, 4,265,668, Cl. 106-73.300.
Kikuchi, Tsuyoshi: *See*—
Asakuma, Kazutaka; and Kikuchi, Tsuyoshi, 4,265,297, Cl. 164-303.000.
Killmaier, Horst: *See*—
Rosemeier, Friedrich; and Killmaier, Horst, 4,265,428, Cl. 251-346.000.
Kilmer, Lauren G. Filament vegetation trimmer. 4,265,019, Cl. 30-276.000.
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., to Shell Oil Company. Olefin disproportionation process. 4,266,085, Cl. 585-645.000.
Kimble, Laurie A.: *See*—
White, Weimar W.; and Kimble, Laurie A., 4,265,862, Cl. 423-21.100.
Kimmon Manufacturing Co., Ltd.: *See*—
Onoda, Hajime, 4,265,127, Cl. 73-861.780.
Kimura, Masao; Sobata, Tamotu; and Wada, Hideo, to Nippon Paint Co., Ltd. Process for cleaning of tin-plated steel cans. 4,265,780, Cl. 252-156.000.
Kinast, Gunther; and Schedel, Michael, to Bayer Aktiengesellschaft. Production of N-substituted derivatives of 1-desoxy-nojirimycin. 4,266,025, Cl. 435-84.000.
Kinetics Technology Intl. B.V.: *See*—
Dinulescu, Mircea, 4,265,732, Cl. 208-106.000.
King, John M.: *See*—
deVries, Louis; and King, John M., 4,265,773, Cl. 252-46.400.
King, Joseph A. Spring loaded free floating stripper finger with stabilizer for a web corrugating machine. 4,265,697, Cl. 156-473.000.
Kingsbury Machine Tool Corporation: *See*—
Grover, Robert R., 4,265,131, Cl. 74-89.160.
Kinnard, William D.: *See*—
Stone, Arnold F.; and Kinnard, William D., 4,265,692, Cl. 156-180.000.
Kirby Pharmaceuticals Ltd: *See*—
Hunt, Peter; and Trelford, Aston M., 4,265,847, Cl. 264-122.000.
Kirchhoff, Bernhard, to O&K Orenstein & Koppel Aktiengesellschaft. Rotary drum mounted by means of running rings. 4,265,031, Cl. 34-108.000.
Kirin Beer Kabushiki Kaisha: *See*—
Nakamura, Katsumi; and Kitamura, Kumpei, 4,266,028, Cl. 435-118.000.
Kirschner, Lawrence: *See*—
Winston, Anthony E.; Cala, Francis R.; Lengyel, Stephen P.; Kirschner, Lawrence; and Bracilovic, Dragomir, 4,265,790, Cl. 252-532.000.
Kishi, Toyokazu: *See*—
Hashimoto, Naoto; and Kishi, Toyokazu, 4,265,814, Cl. 260-239.30P.
Kishimoto, Toshio: *See*—
Fujii, Osamu; Kishimoto, Toshio; and Kobayashi, Akio, 4,266,043, Cl. 521-175.000.
Kitagawa, Tsuneo: *See*—
Shibazaki, Kenji; Arai, Kenichi; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,265,440, Cl. 271-9.000.
Kitahara, Yutaka. Method and apparatus for molding concrete block products. 4,265,609, Cl. 425-260.000.
Kitamura, Kumpei: *See*—
Nakamura, Katsumi; and Kitamura, Kumpei, 4,266,028, Cl. 435-118.000.
Kitano, Hisao: *See*—
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,266,055, Cl. 544-221.000.
Kiwala, Jacob: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,265,923, Cl. 426-538.000.
Kizaki, Shigeru, to Citizen Watch Co., Ltd. Subminiature piezoelectric quartz vibrator. 4,266,156, Cl. 310-344.000.
Klay, Hans. Apparatus for manufacturing a plastic insulator equipped with helical-shaped shields. 4,265,607, Cl. 425-113.000.
Kleemann, Manfred: *See*—
Forster, Siegfried; Kleemann, Manfred; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans-Jurgen, 4,265,302, Cl. 165-165.000.
Klefenz, Heinrich: *See*—
Tschang, Chung-Ji; Klefenz, Heinrich; and Sanner, Axel, 4,266,030, Cl. 435-180.000.
Klein, Jurgen: *See*—
Gappa, Gunther; Juntgen, Harald; and Klein, Jurgen, 4,265,767, Cl. 210-662.000.
Klesper, Hugo: *See*—
Busse, Oswald; and Klesper, Hugo, 4,265,171, Cl. 100-118.000.
Busse, Oswald; and Klesper, Hugo, 4,265,749, Cl. 210-138.000.
Klibofske, Virgil L. Foundation covering. 4,265,062, Cl. 52-97.000.
Klimeck, Hugo: *See*—
Schupphaus, Herbert; and Klimeck, Hugo, 4,265,488, Cl. 299-43.000.
Klimowicz, Michael A.; and Cornell, Charles R., to Eaton Corporation. Transient start-up eliminator for pressure piloted valve. 4,265,272, Cl. 137-625.620.
Klockner-Humboldt-Deutz AG: *See*—
Brachthauser, Kunibert; and Herchenbach, Horst, 4,265,670, Cl. 106-100.000.
Weiffen, Karl-Heinz, 4,265,744, Cl. 209-457.000.
Kloek, James A., to Monsanto Company. Herbicidal compositions containing α-halo acetanilides and substituted bicyclo(3.3.1)non-2-ene compounds as safening agents. 4,265,657, Cl. 71-106.000.
Knapp, Robert L.: *See*—
Blodee, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., 4,265,502, Cl. 312-109.000.
Knecht, Werner. Fire resistant Material. 4,265,317, Cl. 169-50.000.
Knifton, John F., to Texaco Development Corp. Manufacture of ethylene glycol from synthesis gas. 4,265,828, Cl. 260-449.00L.
Knight, Milton M., Jr.: *See*—
Freeman, Danny M.; Knight, Milton M., Jr.; Payton, Clarence M.; Simpson, Robert S.; and Smith, Howard B., Jr., 4,264,993, Cl. 8-149.000.
Knittel, Volker: *See*—
Debus, Gerhard; Girg, Friedrich; and Knittel, Volker, 4,265,674, Cl. 106-314.000.
Knoche, Jochem: *See*—
Holzler, Georg; and Knoche, Jochem, 4,266,169, Cl. 318-490.000.
Knorr-Bremse GmbH: *See*—
Meinicke, Hans-Peter, 4,265,489, Cl. 303-3.000.
Pollinger, Hans, 4,265,492, Cl. 303-14.000.
Knudsen, Ernest W., Jr.: *See*—
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,265,696, Cl. 156-443.000.
Koa Oil Company, Limited: *See*—
Noguchi, Kosaku; and Komi, Nobuyuki, 4,265,710, Cl. 201-27.000.
Kobayashi, Akio: *See*—
Fujii, Osamu; Kishimoto, Toshio; and Kobayashi, Akio, 4,266,043, Cl. 521-175.000.
Kobayashi, H.: *See*—
Hatada, Kenji; Kobayashi, H.; and Yokura, Miyoshi, 4,265,276, Cl. 138-177.000.
Kobayashi, Hidehiko: *See*—
Ueda, Takeshi; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,266,009, Cl. 430-346.000.
Kobayashi, Hidetoshi; Tanaka, Mitsugu; Inouye, Kozo; and Naito, Hideki, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing yellow coupler. 4,266,019, Cl. 430-551.000.
Kobayashi, Hisao, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Refrigerant compressor protecting device. 4,265,091, Cl. 62-126.000.
Koch, Franz-Peter; Pinck, Peter; Petersen, Kurt-Eckard; Lange, Norbert; Kohler, Elke; and Bornfleth, Ulrich, to Hauni-Werke Korber & Co. KG. Apparatus for perforating cigarette paper or the like. 4,265,254, Cl. 131-281.000.

Koch, Rudolf: *See—*
Herbst, Heiner; Pfleiderer, Hans-Jorg; Koch, Rudolf; and Tihanyi, Jeno, 4,266,235, Cl. 357-30.000.
Kocsis, Karoly; Peter, Heinrich; and Bickel, Hans, to Ciba-Geigy Corporation. Cephalosporins having an α-acylaminoacetic acid side chain. 4,265,892, Cl. 424-246.000.
Koda, Hirokazu: *See—*
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,188, Cl. 112-158.00B.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,189, Cl. 112-158.00E.
Koehring GmbH - Bomag Division: *See—*
Vural, Gulertan; Carle, Udo; and Lenkeit, Manfred, 4,265,130, Cl. 74-87.000.
Koepcke, Richard W.: *See—*
Juliana, Anthony, Jr.; Koepcke, Richard W.; Mills, Ross N.; and Talke, Frank E., 4,266,232, Cl. 346-140.00R.
Koetter, Robert E., to UMC Industries, Inc. Apparatus for totalizing sales. 4,265,351, Cl. 194-1.00M.
Kofink, Wolfgang, to Robert Bosch GmbH. Apparatus for long-term bearing lubrication. 4,265,496, Cl. 308-122.000.
Kofod, Hans, to Nordisk Insulinlaboratorium. Therapeutically active polypeptides or acid addition salts thereof and a process for producing such compounds. 4,265,884, Cl. 424-177.000.
Kohlbacher, Gerhard: *See—*
Hoppner, Dietrich; and Kohlbacher, Gerhard, 4,266,100, Cl. 179-18.0GF.
Kohler, Elke: *See—*
Koch, Franz-Peter; Pinck, Peter; Petersen, Kurt-Eckard; Lange, Norbert; Kohler, Elke; and Bornfleth, Ulrich, 4,265,254, Cl. 131-281.000.
Koizumi, Shigenobu: *See—*
Obata, Katsuhiro; and Koizumi, Shigenobu, 4,266,291, Cl. 368-168.000.
Kojima, Tosaku: *See—*
Kato, Katsuhiko; and Kojima, Tosaku, 4,266,256, Cl. 360-128.000.
Kolb, Erich; and Laurent, Heinrich, to Robert Bosch GmbH. Wiping arrangement for wiping a vehicle window. 4,264,997, Cl. 15-250.290.
Komatsu, Toshiyuki: *See—*
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,265,991, Cl. 430-64.000.
Komatsu, Yasuhiro: *See—*
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,265,910, Cl. 424-325.000.
Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH: *See—*
Eckle, Otto, 4,265,574, Cl. 408-188.000.
Komi, Nobuyuki: *See—*
Noguchi, Kosaku; and Komi, Nobuyuki, 4,265,710, Cl. 201-27.000.
Kommanditgesellschaft Schwarzhaupt: *See—*
Lamprecht, Walther, 4,266,022, Cl. 435-26.000.
Kondo, Kiyoshi: *See—*
Fujisawa, Tamotsu; Kondo, Kiyoshi; and Sakai, Kunikazu, 4,266,067, Cl. 549-79.000.
Koninklijke Adriaan Volker Groep B.V.: *See—*
Goedvolk, Arie, 4,265,035, Cl. 37-58.000.
Konkle, Phillip E.: *See—*
Goscenski, Edward J., Jr.; and Konkle, Phillip E., 4,265,143, Cl. 74-710.500.
Konnai, Makoto: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,265,654, Cl. 71-86.000.
Koot, Theodorus A. J.: *See—*
Verpalen, Willem A.; and Koot, Theodorus A. J., 4,265,759, Cl. 210-261.000.
Koppers Company, Inc.: *See—*
Kamody, John F., 4,265,868, Cl. 423-415.00A.
Koppl, Georg: *See—*
Eidinger, Adolf; Flossel, Carl D.; Koppl, Georg; Ulrich, Alfred; and Schibli, Hans, 4,266,258, Cl. 361-58.000.
Korsgaard, Carl E. Safety locking mechanism for wheelchairs. 4,265,478, Cl. 296-65.00R.
Kosek, John A.: *See—*
Nolan, Mary E.; Kosek, John A.; and La Conti, Anthony B., 4,265,714, Cl. 204-1.00T.
Kosinski, Robert E.: *See—*
Nobile, Arthur, 4,265,823, Cl. 260-397.400.
Koskenniska, Lasse A.; and Puhakka, Marie M., to Farmos-Yhtyma Oy. Process for the isolation of β-sitosterol containing a low percentage of α-sitosterol. 4,265,824, Cl. 260-397.250.
Kosuda, Tooru: *See—*
Arao, Umeo; Egami, Tsuneyuki; Kosuda, Tooru; and Takeuchi, Yasuhiro, 4,265,163, Cl. 91-361.000.
Kotthuas, Erich, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Apparatus for grinding cutting tools. 4,265,053, Cl. 51-3.000.
Kouchi, Toshihiro; Takayama, Hiroshi; and Aizawa, Tatsuo, to Mita Industrial Company Limited. Coated magnetic developer particles for electrophotography containing vinyl and olefin resins. 4,265,992, Cl. 430-107.000.
Kovacs, Gyula: *See—*
Heller, Laszlo; Forgo, Laszlo; Papp, Istvan; Bodas, Janos; Kovacs, Gyula; and Laszlo, Karoly, 4,265,275, Cl. 138-38.000.
Koyama, Hiroyasu: *See—*
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,265,910, Cl. 424-325.000.
Kozel, Charles A.: *See—*
Brown, Vincent B.; and Kozel, Charles A., 4,265,013, Cl. 29-739.000.
Kraft, Erhard: *See—*
Dobler, Karl-Ulrich; Mura, Sigurd; and Kraft, Erhard, 4,266,273, Cl. 364-426.000.
Kraftwerk Union AG: *See—*
Schuh, Heinz, 4,265,966, Cl. 428-324.000.
Kralik, Andrew J.: *See—*
Di Marco, Bernard; and Kralik, Andrew J., 4,266,209, Cl. 335-6.000.
Krause, Robert F.; Pavlik, Norman M.; and Grunert, Kurt A., to Westinghouse Electric Corp. Method of producing low loss pressed magnetic cores from microlaminations. 4,265,681, Cl. 148-111.000.
Krauth, Axel: *See—*
Forster, Siegfried; Kleemann, Manfred; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans-Jurgen, 4,265,302, Cl. 165-165.000.
Krautheim, Raymond S.: *See—*
Mandle, Richard M.; Karsai, Frank; and Krautheim, Raymond S., 4,265,855, Cl. 422-65.000.
Krebs, Klaus-Werner; and Metzger, Carl, to Bayer Aktiengesellschaft. Preparation of anthranilamides. 4,265,832, Cl. 564-163.000.
Kretchman, Gerald L.; Mulder, James R.; and Pielemeier, John W., to Whirlpool Corporation. Pivotal siphon bleach dispenser for automatic washer. 4,265,100, Cl. 68-12.00R.
Krieg, Michael L.; and Quinn, Paul A., Jr., to International Business Machines Corporation. Apparatus for setting proportional margins based upon the width of a scanned sheet of paper. 4,265,556, Cl. 400-342.000.
Kring, Elbert V., to Du Pont de Nemours, E. I., and Company. Gaseous contaminant dosimeter with diffusion device therefor and method. 4,265,635, Cl. 23-232.00R.
Kristensen, Leif: *See—*
Lundborg, Hans; Kristensen, Leif; and Nyqvist, Stig, 4,265,177, Cl. 102-275.900.
Kroenke, William J., to B. F. Goodrich Company, The. Hexamethylenetetramine molybdate. 4,266,051, Cl. 544-181.000.
Kroyer, Karl K. K. Method of utilizing fly ash from power works and refuse disposal plants in the production of cement clinkers, and a plant for carrying out said method. 4,265,671, Cl. 106-103.000.
Krueger, Hans: *See—*
Greubel, Waldemar; and Krueger, Hans, 4,265,516, Cl. 350-345.000.
Kruh, Daniel: *See—*
Jablonski, Richard J.; and Kruh, Daniel, 4,266,047, Cl. 528-322.000.
Kruk, Stanislaw J.: *See—*
Johannesson, Stig-Erik; and Kruk, Stanislaw J., 4,265,137, Cl. 74-473.00R.
Krulwich, Lester S. Magnetic tracing stand. 4,265,624, Cl. 434-88.000.
Krutz, Gary W., to Purdue Research Foundation. Device for treating agricultural products to enhance drying. 4,265,076, Cl. 56-14.400.
Kubo, Sueki, to Kurosaki Refractories Co., Ltd. Apparatus for repairing the tap hole of a converter. 4,265,433, Cl. 266-273.000.
Kubota, Ltd.: *See—*
Matsubara, Yoshitaka; Shimoie, Shizuo; Watanabe, Takao; and Tomiyama, Yoshio, 4,265,494, Cl. 305-12.000.
Kubota, Reiko: *See—*
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,265,910, Cl. 424-325.000.
Kueper, Theodore V.; Schack, Warren R.; and Rock, Harry, to Swift & Company. Preparation of partially dehydrated meat products. 4,265,918, Cl. 426-264.000.
Kugimiya, Kazuya, to Mitsui Petrochemical Industries, Ltd. Multilayer bag structure for packaging. 4,265,949, Cl. 428-35.000.
Kuhn, Peter M., to United States of America, Commerce. Method and apparatus for detecting clear air turbulences. 4,266,130, Cl. 250-339.000.
Kuhnel, Werner; and Spielau, Paul, to Dynamit Nobel Aktiengesellschaft. Process for the production of foamed plastics from polyolefins. 4,266,041, Cl. 521-92.000.
Kuhnelt, Gert: *See—*
Plockinger, Erwin; Kuhnelt, Gert; Machner, Peter; and Jager, Heimo, 4,265,295, Cl. 164-52.000.
Kukanskis, Peter E.: *See—*
Goldstein, Rachel; Kukanskis, Peter E.; and Grunwald, John J., 4,265,943, Cl. 427-305.000.
Kumins, Charles A.; and Warford, Milan L., to Tremco, Incorporated. Waterproofing sheet material. 4,265,967, Cl. 428-332.000.
Kunze, Bernhard: *See—*
Wittkopp, Helmut; and Kunze, Bernhard, 4,265,149, Cl. 82-8.000.
Kuo, Mau-Jung: *See—*
Miller, Robert E.; Kuo, Mau-Jung; and Lewis, Charles, Jr., 4,266,032, Cl. 435-241.000.
Kuramoto, Minoru, to Nissan Motor Company, Limited. Easy-to-assemble sliding arrangement in disc brake. 4,265,341, Cl. 188-73.300.
Kurashige, Shinji: *See—*
Hachisuka, Shunji; Kurashige, Shinji; and Saahiro, Yasuo, 4,265,678, Cl. 148-12.00B.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,265,869, Cl. 423-447.400.

Nishimoto, Yoshiharu; and Yamazaki, Kengo, 4,265,693, Cl. 156-218.000.
Kurimoto, Yoshitane. Greenhouse device. 4,265,300, Cl. 165-47.000.
Kurosaki Refractories Co., Ltd.: *See—*
Kubo, Sueki, 4,265,433, Cl. 266-273.000.
Kurple, Kenneth R.: *See—*
Holsopple, Dale B.; Kurple, Wasyl W.; Kurple, William M.; and Kurple, Kenneth R., 4,265,809, Cl. 260-124.00R.
Kurple, Wasyl W.: *See—*
Holsopple, Dale B.; Kurple, Wasyl W.; Kurple, William M.; and Kurple, Kenneth R., 4,265,809, Cl. 260-124.00R.
Kurple, William M.: *See—*
Holsopple, Dale B.; Kurple, Wasyl W.; Kurple, William M.; and Kurple, Kenneth R., 4,265,809, Cl. 260-124.00R.
Kurt Manufacturing Company, Inc.: *See—*
Lenz, John O., 4,265,282, Cl. 144-219.000.
Kurt Wayne, Inc.: *See—*
Wayne, Kurt, 4,265,098, Cl. 63-2.000.
Kurumada, Tomoyuki: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,265,803, Cl. 260-45.8NZ.
Kuse, Kazuki: *See—*
Yoshieda, Keiichi; and Kuse, Kazuki, 4,265,014, Cl. 29-766.000.
Kuvshinov, Nikolai S.: *See—*
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Kuwik, John J.; Braden, Arthur B.; Taylor, Samuel K.; and Covic, John, to Ohio Nuclear, Inc. Method of determining collimator aperture efficiency and apparatus with an efficient collimator aperture size. 4,266,135, Cl. 250-445.00T.
Kyowa Hakko Kogyo Co., Ltd.: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,266,023, Cl. 435-28.000.
L. B. Foster Company: *See—*
Jackson, Bertie, 4,265,401, Cl. 238-17.000.
Laber, Walter: *See—*
Miserlis, Constantine D.; Luke, Albert G., Jr.; Laber, Walter; and Guetlhuber, Friedrich, 4,265,223, Cl. 126-435.000.
Labovitz, Jeffrey N.: *See—*
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,266,056, Cl. 544-311.000.
Lacharmoise, Paul: *See—*
Bordas, Robert; Lacharmoise, Paul; and Moteruil, Gilbert, 4,265,097, Cl. 62-438.000.
Lachmann, Burkhard: *See—*
Birkenstock, Udo; Lachmann, Burkhard; Metten, Josef; and Schmidt, Herbert, 4,265,834, Cl. 564-421.000.
La Conti, Anthony B.: *See—*
Nolan, Mary E.; Kosek, John A.; and La Conti, Anthony B., 4,265,714, Cl. 204-1.00T.
Ladany, Ivan, to RCA Corporation. Etching of optical fibers. 4,265,699, Cl. 156-657.000.
Ladd, Glenn O., Jr., to Hughes Aircraft Company. Method for making improved Schottky-barrier gate gallium arsenide field effect devices. 4,265,934, Cl. 427-84.000.
Ladisch, Michael R.: *See—*
Tsao, George T.; Dale, Bruce E.; and Ladisch, Michael R., 4,265,675, Cl. 127-37.000.
L'Air Liquide, Societe Anonyme pour l'Etude l'Ecploitation des Procedes Georges Claude: *See—*
Lermuzeaux, Andre, 4,265,921, Cl. 426-444.000.
Lajovic, Dimitri E.; and Lassner, Hans, to Impact International Pty. Limited. Degassing molten metals. 4,265,432, Cl. 266-220.000.
Lallemand, Pierre: *See—*
Leclerc, Pierre; Puech, Claude; Papuchon, Michel; and Lallemand, Pierre, 4,265,541, Cl. 356-350.000.
Lambie, John W., to Neptune Glenfield Limited. Shaft seals. 4,265,457, Cl. 277-105.000.
Lambrecht, Henning F. W. M. A.: *See—*
Bucker, Fritz O.; and Lambrecht, Henning F. W. M. A., 4,265,742, Cl. 209-399.000.
Lamouric, Pol. Device for assembling tools on a wheel, particularly cutting tools on a trenching machine. 4,265,037, Cl. 37-94.000.
Lampkin, Curtis: *See—*
Jordan, John P.; and Lampkin, Curtis, 4,265,933, Cl. 427-54.100.
Lamprecht, Walther, to Kommanditgesellschaft Schwarzhaupt. Process for the determination of at least one of the iso-enzymes of lactatedehydrogenase. 4,266,022, Cl. 435-26.000.
Lane, Bruce V.: *See—*
Swiatosz, Edmund; Dykes, Wiley V.; Grimmer, Paul D.; and Lane, Bruce V., 4,265,238, Cl. 128-205.120.
Lang, William H.: *See—*
Audeh, Costandi A.; Chang, Clarence D.; and Lang, William H., 4,265,735, Cl. 208-234.000.
Langdon, William K., to BASF Wyandotte Corporation. Oxyalkylated polyglycerols and water-based lubricants prepared therefrom. 4,265,774, Cl. 252-49.300.
Lange, Gerhard; and Boy, Juergen, to Siemens Aktiengesellschaft. Surge arrester. 4,266,260, Cl. 361-120.000.
Lange, Henry J., to Deere & Company. Tractor draft link structure. 4,265,464, Cl. 280-460.00A.
Lange, Norbert: *See—*
Koch, Franz-Peter; Pinck, Peter; Petersen, Kurt-Eckard; Lange, Norbert; Kohler, Elke; and Bornfleth, Ulrich, 4,265,254, Cl. 131-281.000.
Langner, Fred R. Photocopier collator. 4,265,445, Cl. 271-296.000.
Langston, Larry D. Side opening, shiftable cover for trucks or wagon beds. 4,265,479, Cl. 296-100.000.
Lankenau, Henry G., to Ecodyne Corporation. Liquid concentration method. 4,265,701, Cl. 159-47.0WL.
Lantzsch, Reinhard, to Bayer Aktiengesellschaft. Preparation of dihalogenovinylcyclopropanecarboxylic acids and esters. 4,265,819, Cl. 260-346.220.
Lanvin, Serge, to Societe Marinoni. Tucker cylinder. 4,265,438, Cl. 493-428.000.
Laprade, Gerard: *See—*
Coulon, Michel; and Laprade, Gerard, 4,265,850, Cl. 264-225.000.
Larsson, Rolf L.: *See—*
Ericksson, Jan C.; and Larsson, Rolf L., 4,265,927, Cl. 427-2.000.
Lasalandra, Raffaele. Foldable bathtub liner tank. 4,264,991, Cl. 4-514.000.
Laser Precision Corporation: *See—*
Doyle, Walter M., 4,265,540, Cl. 356-346.000.
Laskin, Allen I.: *See—*
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,266,034, Cl. 435-253.000.
Laskos, Stanley, Jr.: *See—*
Mailer, Hugh; and Laskos, Stanley, Jr., 4,265,784, Cl. 252-299.000.
Lassner, Hans: *See—*
Lajovic, Dimitri E.; and Lassner, Hans, 4,265,432, Cl. 266-220.000.
Laszlo, Karoly: *See—*
Heller, Laszlo; Forgo, Laszlo; Papp, Istvan; Bodas, Janos; Kovacs, Gyula; and Laszlo, Karoly, 4,265,275, Cl. 138-38.000.
Lauber, Ernst, to Habegger, Willy. Rolling and stepping vehicle. 4,265,326, Cl. 180-8.00R.
Laurent, Heinrich: *See—*
Kolb, Erich; and Laurent, Heinrich, 4,264,997, Cl. 15-250.290.
Lautenschlager, Karl, Jr., to Karl Lautenschlager KG, Mobelbeschlagfabrik. Furniture hinge. 4,265,000, Cl. 16-129.000.
Law, Andrew B.: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,265,899, Cl. 424-270.000.
Lawrence, Frederick D., to Combustion Engineering, Inc. Radially channeled guide post for a nuclear fuel assembly. 4,265,708, Cl. 176-78.000.
Lawrence, Rodney G.: *See—*
Gilicinski, George A.; and Lawrence, Rodney G., 4,265,663, Cl. 106-10.000.
Lawson, Martial: *See—*
MacLennan, Mary E.; and Lawson, Martial, 4,265,915, Cl. 426-28.000.
Lawson, Terence M., to Coulter Systems Corporation. Lithographic printing plate and method for the preparation of same. 4,265,987, Cl. 430-49.000.
Lay, William D. Cotton gleaner. 4,265,078, Cl. 56-28.000.
Leach Industries: *See—*
Drake, Charles A.; and Bayer, Raymond M., 4,265,450, Cl. 273-73.00G.
Lebouc, Bernard, to Framatome. Remote-controlled screwing device. 4,265,011, Cl. 29-720.000.
Lechtken, Peter: *See—*
Hesse, Anton; Lechtken, Peter; Nicolaus, Walter; and Scholz, Dankmar, 4,265,723, Cl. 204-159.230.
Leclerc, Pierre; Puech, Claude; Papuchon, Michel; and Lallemand, Pierre, to Thomson-CSF. Interferometric laser gyrometer. 4,265,541, Cl. 356-350.000.
Lee, Chi-Long: *See—*
Homan, Gary R.; and Lee, Chi-Long, 4,265,792, Cl. 260-18.00S.
Leeds & Northrup Company: *See—*
Wertheimer, Alan L., 4,265,538, Cl. 356-246.000.
Legutke, Gunter; Scholz, Harald; and Schuchardt, Kurt, to Hoechst Aktiengesellschaft. Production of 1,2-dichloroethane. 4,265,837, Cl. 570-243.000.
Lehnus, Edward L. Fositive displacement pulse free rotary fluid pump. 4,265,606, Cl. 418-201.000.
Leitnaker, James M., to United States of America, Energy. Delta ferrite-containing austenitic stainless steel resistant to the formation of undesirable phases upon aging. 4,265,983, Cl. 428-683.000.
Lengyel, Stephen P.: *See—*
Winston, Anthony E.; Cala, Francis R.; Lengyel, Stephen P.; Kirschner, Lawrence; and Bracilovic, Dragomir, 4,265,790, Cl. 252-532.000.
Lenkeit, Manfred: *See—*
Vural, Gulertan; Carle, Udo; and Lenkeit, Manfred, 4,265,130, Cl. 74-87.000.
Lennartz, Rudiger; and Romey, Ingo, to Bergwerksverband GmbH. Alluvial filter candle apparatus and a method of cleaning the same. 4,265,771, Cl. 210-769.000.
Lenz, John O., to Kurt Manufacturing Company, Inc. Tubular rotating cutter. 4,265,282, Cl. 144-219.000.
Lenz, Robert W.; and Vert, Michel, to Research Corporation. Malic acid polymers. 4,265,247, Cl. 128-335.500.
Leonard, Willie B. Fluidic repeater. 4,265,331, Cl. 181-119.000.

Lermuzeaux, Andre, to L'Air Liquide, Societe Anonyme pour l'Etude l'Ecploitation des Procedes Georges Claude. Process for quick-freezing of food products. 4,265,921, Cl. 426-444.000.
Lesher, George Y.; and Gruett, Monte D., to Sterling Drug Inc. 1,2-Dihydro-5-pyridinyl-3H-pyrazolo[3,4-b]pyridin-3-ones and their use as cardiotonics. 4,265,895, Cl. 424-256.000.
Le Thanh, Tri: *See*—
Hons-Olivier, Jacques P.; Le Thanh, Tri; and Devanz, Francois M., 4,266,039, Cl. 521-85.000.
Leverentz, Earl T.: *See*—
Schreyer, Kenneth D.; Leverentz, Earl T.; Nusz, Thomas R.; and Benton, Reuben P., 4,265,181, Cl. 105-150.000.
Levine, Beth, to Betherb, Inc. Expandable article of footwear. 4,265,032, Cl. 36-11.500.
Levy, Avner; and Karsh, Irving, to Bell & Howell Company. Torsional fluid damper system. 4,265,386, Cl. 226-190.000.
Levy, Paul M. Television system. 4,266,240, Cl. 358-3.000.
Lewandowski, Ted J.: *See*—
Kayalioglu, Inanc; Roman, Vincent G.; and Lewandowski, Ted J., 4,266,099, Cl. 179-16.0EA.
Lewis, Charles, Jr.: *See*—
Miller, Robert E.; Kuo, Mau-Jung; and Lewis, Charles, Jr., 4,266,032, Cl. 435-241.000.
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., to Rohm and Haas Company. Cosmetic formulation comprising 3-isothiazolones. 4,265,899, Cl. 424-270.000.
LGZ Landis & Gyr Zug AG: *See*—
Schmidhauser, Rolf, 4,266,122, Cl. 235-454.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Bergmann, Gunther, 4,266,150, Cl. 307-268.000.
Hoppner, Dietrich; and Kohlbacher, Gerhard, 4,266,100, Cl. 179-18.0GF.
Stiltz, Erwin; Lindenmayer, Heinz; Geis, Wilhelm; and Wolf, Otto, 4,265,435, Cl. 269-139.000.
Licitis, Gunars, Jr.: *See*—
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Lieber, Albert J.: *See*—
Sutphin, Howard D.; and Lieber, Albert J., 4,266,247, Cl. 358-217.000.
Liebman, Theodore; and Nemiroff, Robert V. Color organ. 4,265,159, Cl. 84-464.00R.
Lim, Teong C.; and Staples, Edward J., to Rockwell International Corporation. Remote acoustic wave sensors. 4,265,124, Cl. 73-703.000.
Limare, Armand; and Maillot, Francois, to Societe Metallurgique le Nickel S. L. N. Method for producing hydroxylated nickel compounds. 4,265,718, Cl. 204-96.000.
Lin, Shiow-Ching, to DeSoto, Inc. Polyazlactone-electron deficient ethylenically unsaturated resinous compositions and method for foaming same. 4,266,040, Cl. 521-90.000.
Lin, Tung-Yen; Yang, Yue-Chyou; and Chow, Philip Y., to T. Y. Lin International. Prestressed concrete pressure vessels. 4,265,066, Cl. 52-224.000.
Lindenmayer, Heinz: *See*—
Stiltz, Erwin; Lindenmayer, Heinz; Geis, Wilhelm; and Wolf, Otto, 4,265,435, Cl. 269-139.000.
Lindner-Frimmel, Silvia J.: *See*—
Swetly, Peter; Adolf, Gunther R.; Bodo, Gerhard; Lindner-Frimmel, Silvia J.; Meindl, Peter; and Tuppy, Hans, 4,266,024, Cl. 435-68.000.
Linnell, John W.: *See*—
Sweet, Barry A.; and Linnell, John W., 4,265,061, Cl. 52-93.000.
Lipman, Kenneth, to United Technologies Corporation. Dual core magnetic amplifier sensor. 4,266,190, Cl. 324-117.00R.
Lippacher, Wolfgang; and Teger, Gerhard, to Hilti Aktiengesellschaft. Tool for placing self-drilling dowels. 4,265,008, Cl. 29-240.000.
Litton Industrial Products, Inc.: *See*—
Cribbs, Robert W., 4,265,121, Cl. 73-607.000.
Liu, Chi-sheng; Weaver, Lelland A. C.; and Williams, Roy K. Metal halide laser tube structure. 4,266,200, Cl. 331-94.50G.
Livesay, Richard E., to Caterpillar Tractor Co. Method and apparatus for assembly of a track chain with minimum end play. 4,265,084, Cl. 59-7.000.
Lloyd, Havelock D., to Vivitar Corporation. Incident metering electronic flash control. 4,266,163, Cl. 315-151.000.
Lo, Jhy-Dou R.: *See*—
Tebbens, Klaas; Fischer, Erhardt; and Lo, Jhy-Dou R., 4,265,939, Cl. 427-222.000.
Lockheed Missiles & Space Company, Inc.: *See*—
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Lodge & Shipley Company, The: *See*—
Glover, Charles G., 4,265,356, Cl. 198-444.000.
Logemann, Larry R., to Caterpillar Tractor Co. Tilt steering wheel and support column apparatus. 4,265,139, Cl. 74-485.000.
LogEtronics Inc.: *See*—
McIntosh, Walter L., 4,265,532, Cl. 355-20.000.
Logsdon, Duane D., to Logsdon Foundation, The. Roof flashing structures. 4,265,058, Cl. 52-58.000.
Logsdon Foundation, The: *See*—
Logsdon, Duane D., 4,265,058, Cl. 52-58.000.
Lohmann, Robert P.; and Markowski, Stanley J., to United Technologies Corporation. Fuel injection system for low emission burners. 4,265,615, Cl. 431-353.000.
Lo Maglio, Lewis C.: *See*—
Hayes, Thomas H.; and Lo Maglio, Lewis C., 4,265,948, Cl. 428-35.000.
Longi, Paolo: *See*—
Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pricca, Angelo, 4,265,785, Cl. 252-429.00B.
Lonnstrom Oy: *See*—
Vaananen, Raimo, 4,265,396, Cl. 236-68.00R.
Loof, Rupert H. C. Automatic golf teeing devices. 4,265,453, Cl. 273-201.000.
Loomis, Russell M., to Unarco Industries, Inc. Two-piece curtain-like lading-restraining device. 4,265,577, Cl. 410-118.000.
Lopez, Esteban; and Matsunaga, Douglas, to Braner Enterprises, Inc. Slitter having pivotal multiple spaced pairs of arbors. 4,265,155, Cl. 83-479.000.
Lordi, David T.: *See*—
Kelada, Nabih P.; Lue-Hing, Cecil; and Lordi, David T., 4,265,857, Cl. 422-101.000.
L'Oreal: *See*—
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Louis Marx & Co., Inc.: *See*—
Reiner, Lawrence L.; Marra, Michael; and Hennig, Michael F., 4,265,449, Cl. 273-41.000.
Loutfy, Raouf O.; Keller, Rudolf; and Yao, Neng-Ping, to United States of America, Energy. Method of winning aluminum metal from aluminous ore. 4,265,716, Cl. 204-67.000.
Lowenhar, Herman. Method of forming transmission lines using tubular extendible structures. 4,265,690, Cl. 156-161.000.
Luce, Carl T.; Banks, Edwin L., Jr.; and Dowell, Terrence P., to Barry Wright Corporation. Thrust bearing. 4,265,498, Cl. 308-230.000.
Lucki, John L.; and Naha, Alan B., to Dental Essentials, Inc. Method and apparatus for processing dental models. 4,265,619, Cl. 433-54.000.
Lue-Hing, Cecil: *See*—
Kelada, Nabih P.; Lue-Hing, Cecil; and Lordi, David T., 4,265,857, Cl. 422-101.000.
Luebke, Robert W., to True Temper Corporation. Variable thickness mat for stress transition zones of railroad track crossings, switches, and the like, and method of use. 4,265,398, Cl. 238-1.000.
Luhleich, Hartmut: *See*—
Dias, Francisco J.; Gupta, Ashok K.; Gyarmati, Erno; Kampel, Marian; Luhleich, Hartmut; Munzer, Rudolf; and Naoumidis, Aristidis, 4,265,843, Cl. 264-57.000.
Luke, Albert G., Jr.: *See*—
Miserlis, Constantine D.; Luke, Albert G., Jr.; Laber, Walter; and Guetlhuber, Friedrich, 4,265,223, Cl. 126-435.000.
Lundborg, Hans; Kristensen, Leif; and Nyqvist, Stig, to Nitro Nobel AB. Device in blasting cap for low-energy fuse. 4,265,177, Cl. 102-275.900.
Lundgren, Bengt, to SKF Nova AB. Sealing device. 4,265,455, Cl. 277-53.000.
Lurssen, Klaus, to Bayer Aktiengesellschaft. Compositions and methods for inhibiting the growth of cereals. 4,265,656, Cl. 71-103.000.
Luthi, Oscar, to Ingersoll-Rand Company. Centrifugal separator. 4,265,740, Cl. 209-211.000.
M. T. I. Corporation: *See*—
Noguchi, Hironori; and Sakuma, Kenji, 4,265,022, Cl. 33-174.00P.
Maahs, Gunther: *See*—
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Macartney, Lawrence J.: *See*—
Crum, Gerald W.; and Macartney, Lawrence J., 4,265,858, Cl. 422-129.000.
MacDermid Incorporated: *See*—
Goldstein, Rachel; Kukanskis, Peter E.; and Grunwald, John J., 4,265,943, Cl. 427-305.000.
Machinefabriek W. Hubert & Co. B.V.: *See*—
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Machner, Peter: *See*—
Plockinger, Erwin; Kuhnelt, Gert; Machner, Peter; and Jager, Heimo, 4,265,295, Cl. 164-52.000.
MacLennan, Mary E.; and Lawson, Martial. Protein-containing food material. 4,265,915, Cl. 426-28.000.
MacLeod, Patrick: *See*—
Chuiton, Rene; and MacLeod, Patrick, 4,265,248, Cl. 128-630.000.
MacNitt, Donald G., Jr.; and Walker, Bryant H., to United Technologies Corporation. Forging apparatus. 4,265,105, Cl. 72-354.000.
Maco-Meudon: *See*—
Emonet, Henri, 4,265,322, Cl. 173-169.000.
Maeda, Eizo; and Iizuka, Hiromichi, to Kabushiki Kaisha ASAHI Enterprise. Pressure detecting device. 4,265,164, Cl. 91-417.00R.
Magennis, Steven A.: *See*—
Chalk, Alan J.; and Magennis, Steven A., 4,266,087, Cl. 568-875.000.
Magnie, Robert L., to Terry, Ruel C. Evaluation and production of attic oil. 4,265,309, Cl. 166-252.000.
Mahany, Richard J. Flowmeter method and apparatus. 4,265,125, Cl. 73-861.030.
Maher, Galeb H., to Sprague Electric Company. Ceramic capacitor and method for making the same. 4,266,265, Cl. 361-321.000.
Mahle GmbH: *See*—
Ruhle, Martin, 4,266,186, Cl. 324-65.00R.
Maier, Horst R.: *See*—
Forster, Siegfried; Kleemann, Manfred; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans-Jurgen, 4,265,302, Cl. 165-165.000.

Mailer, Hugh; and Laskos, Stanley, Jr., to General Electric Company. Azine liquid crystal compounds for use in light-control devices. 4,265,784, Cl. 252-299.000.
Maillot, Francois: *See*—
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Mainberger, Walter A.; and Gerritsen, Adrian, to Hayssen Manufacturing Company. Method of and apparatus for packaging. 4,265,070, Cl. 53-433.000.
Makino, Shinichi: *See*—
Kameya, Toru; Makino, Shinichi; and Tsuruta, Masayuki, 4,265,937, Cl. 427-163.000.
Malinowski, William J. Self-calibrating smoke detector and method. 4,266,220, Cl. 340-630.000.
Malone, Jacquelyn M.: *See*—
Ezzell, Bobby R.; Malone, Jacquelyn M.; and Sorenson, Marius W., 4,265,719, Cl. 204-98.000.
Mammino, Joseph, to Xerox Corporation. Carrier core surface treatment. 4,265,995, Cl. 430-107.000.
Mandelcorn, Lyon; Dakin, Thomas W.; and Mercier, George E., to Westinghouse Electric Corp. Meta isopropyl biphenyl insulated electrical apparatus. 4,266,264, Cl. 361-318.000.
Mandle, Richard M.; Karsai, Frank; and Krautheim, Raymond S., to Electro-Nucleonics, Inc. System for performing immunochemical and other analyses involving phase separation. 4,265,855, Cl. 422-65.000.
Mandroian, Harold. Pump apparatus. 4,265,600, Cl. 417-379.000.
Mandroian, Harold. Three valve precision pump apparatus with head pressure flowthrough protection. 4,265,601, Cl. 417-379.000.
Manion, Francis M.: *See*—
Neradka, Vincent F.; and Manion, Francis M., 4,265,162, Cl. 91-3.000.
Maniscalco, Joseph P.: *See*—
Allain, Ronald J.; and Maniscalco, Joseph P., 4,266,068, Cl. 556-430.000.
Mann, Glenn E. Duct assembling tool. 4,265,009, Cl. 29-244.000.
Mansukhani, Ishwar R., to Whittaker Corporation. Light sensitive jet inks. 4,266,229, Cl. 346-1.100.
Manuel, Maylam. Aeration filtration tank and water treatment system. 4,265,753, Cl. 210-199.000.
Manyo Tool Kabushiki Kaisha: *See*—
Senzaki, Chikara, 4,265,460, Cl. 279-97.000.
Marchak, Roman O., to Bendix Corporation, The. Acceleration enrichment feature for electronic fuel injection system. 4,266,275, Cl. 364-431.000.
Marchal, Paul: *See*—
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Marciante, Antonina: *See*—
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Markowski, Stanley J.: *See*—
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Marlin, Jay: *See*—
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Marra, Michael: *See*—
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Marshall, Alan: *See*—
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Marshall, Geoffrey B.: *See*—
Thurston, Victor N.; and Marshall, Geoffrey B., 4,265,426, Cl. 251-306.000.
Marshall, J. Howard, III, to MDH Industries, Inc. Apparatus for controlling neutrons escaping from an elemental analyzer measuring gamma rays arising from neutron capture in bulk substances. 4,266,132, Cl. 250-359.000.
Marshall, Larry J.; and Jensen, Phillip C., to Raychem Corporation. Self-contained exothermic heat recoverable chemical heater. 4,265,216, Cl. 126-263.000.
Marshall, Robert A., to General Electric Company. Permeable mesh current collector for DC machines. 4,266,154, Cl. 310-219.000.
Martel, Jacques; Tessier, Jean; and Teche, Andre, to Roussel Uclaf. Novel chiral ethers and their use in resolution of alcohols and phenols. 4,265,817, Cl. 260-343.30R.
Martin, Gerhard, to Hermann Berstorff Maschinenbau GmbH. Reverse degasification screw extruder with vacuum seal. 4,265,547, Cl. 366-79.000.
Martin, James A.: *See*—
Jackson, Liam R.; Weidner, John P.; Small, William J.; and Martin, James A., 4,265,416, Cl. 244-2.000.
Martin, Philippe: *See*—
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Martin, Thomas W.; and Sandhu, M. Akram, to Eastman Kodak Company. Color imaging devices having integral color filter arrays. 4,266,017, Cl. 430-533.000.
Martin, William L.: *See*—
Britton, Michael W.; Martin, William L.; McDaniel, Jack D.; and Wahl, Harry A., 4,265,310, Cl. 166-259.000.
Martinez, Renato G. Composite staple-type fastener having relatively movable locking portions. 4,265,160, Cl. 411-442.000.
Marvin Glass & Associates: *See*—
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Marvin M. Stark Research Foundation: *See*—
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Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Road pavement and repair. 4,265,563, Cl. 404-75.000.
Mase, Akira: *See*—
Muto, Katsuya; Mori, Kazumasa; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,266,181, Cl. 322-28.000.
Mashimo, Tohru, to Toyo Kogyo Co., Ltd. Advance control system for use in a drilling apparatus. 4,266,171, Cl. 318-571.000.
Masonite Corporation: *See*—
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Massachusetts Institute of Technology: *See*—
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Mastromatteo, Michael. Method of welding a diaphragm assembly. 4,265,389, Cl. 228-219.000.
Masuda, Masafumi: *See*—
Yasuda, Nobu; Masuda, Masafumi; and Morita, Tomoichi, 4,265,969, Cl. 428-342.000.
Masuzawa, Sigeaki: *See*—
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Matalon, Ralph, to Arco Polymers, Inc. Flameproof and fireproof products containing monoethanolamine, diethylamine or morpholine. 4,265,963, Cl. 428-288.000.
Matchell, Raymond: *See*—
Waldron, Christopher J.; and Matchell, Raymond, 4,266,246, Cl. 358-216.000.
Matherat, Philippe, to Thomson-CSF. Processor for a graphic terminal. 4,266,253, Cl. 358-903.000.
Matsubara, Yoshitaka; Shimoie, Shizuo; Watanabe, Takao; and Tomiyama, Yoshio, to Kubota, Ltd. Crawler travelling apparatus. 4,265,494, Cl. 305-12.000.
Matsuda, Yoshio, to Yoshida Kogyo K.K. Warp-knit tape fabric for slide fasteners. 4,265,003, Cl. 24-205.10C.
Matsuki, Minoru: *See*—
Ishiguro, Shoji; Shishido, Tadao; Sakai, Takeo; Sasaki, Noboru; Nagaoka, Joji; and Matsuki, Minoru, 4,266,018, Cl. 430-550.000.
Matsumoto, Hiromitsu, to Yamaha Hatsukoki Kabushiki Kaisha. Induction system for an internal combustion engine. 4,265,202, Cl. 123-308.000.
Matsumoto, Kazuya; Matsumura, Susumu; Nose, Noriyuki; and Okuno, Youichi, to Canon Kabushiki Kaisha. Camera having a holographic indicator. 4,265,522, Cl. 354-53.000.
Matsumoto, Shinichi: *See*—
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,265,930, Cl. 427-34.000.
Matsumura, Isao, to Canon Kabushiki Kaisha. Variable magnification apparatus having illumination compensating ability. 4,265,518, Cl. 351-7.000.
Matsumura, Susumu: *See*—
Matsumoto, Kazuya; Matsumura, Susumu; Nose, Noriyuki; and Okuno, Youichi, 4,265,522, Cl. 354-53.000.
Matsunaga, Douglas: *See*—
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Matsuo, Takashi: *See*—
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Matsushita Electric Industrial Co., Ltd.: *See*—
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Tanaka, Tamotsu; Kato, Michio; Uematsu, Masataka; Nishida, Yoshikazu; and Hosokawa, Shuji, 4,265,320, Cl. 173-12.000.
Matsushita, Shigeo; Ishikawa, Ro; Kaede, Kazuhisa; Mito, Ikuo; and Sugimoto, Shigetoki, to Nippon Electric Co., Ltd. Light switch. 4,265,513, Cl. 350-96.200.
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May, Robert E., to Burlington Industries, Inc. Low penetration coating fabric. 4,265,962, Cl. 428-287.000.
McAlister, Roy E. Multiple fluid medium system and improved hot water supply tank assembly utilized therein. 4,265,220, Cl. 126-421.000.
McArdle, Beryl L. Binary code randomizing system. 4,266,095, Cl. 179-1.50R.
McCain, G. Howard: *See*—
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McClain, Dorothee M., to National Distillers and Chemical Corp. Alcohol-wet particles of ethylene-vinyl ester interpolymer. 4,265,799, Cl. 260-33.40R.
McConachie, John W. Apparatus for storing and dispensing leafy vegetables. 4,265,095, Cl. 62-373.000.
McCormick, Mathew, to Bowthorpe-Hellermann Limited. Clip for fixing an electric cable to a support structure. 4,265,420, Cl. 248-56.000.

McCoy, Reginald F. H., to Vital Industries, Inc. Television special effects arrangement. 4,266,242, Cl. 358-22.000.

McCray, William R.: *See—*
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McCreary, Michael D.; Farley, William C.; and Erickson, Wayne F., to Eastman Kodak Company. Substituted 1-phenyl-3-pyrazolidinone electron transfer agents. 4,266,002, Cl. 430-218.000.

McCreary, William J.; and Carroll, David W., to United States of America, Energy. Coated woven materials and method of preparation. 4,265,982, Cl. 428-608.000.

McDaniel, Jack D.: *See—*
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McDonald, Charles J.; and Beaver, Robert H., to Dow Chemical Company, The. Conversion of carboxamide to N-substituted derivative thereof using carbon magnetic analysis. 4,265,835, Cl. 564-204.000.

McDonald, Robert W.: *See—*
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McElligott, Michael J.: *See—*
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; and Baran, Joseph, 4,265,469, Cl. 283-8.00B.

McEntire, Edward E.; and Gipson, Robert M., to Texaco Dev. Corp. Substituted alkylene oxides from substituted alkylene carbonates. 4,265,821, Cl. 260-348.160.

McIntosh, Walter L., to LogEtronics Inc. Photo printing by intensity and velocity modulation. 4,265,532, Cl. 355-20.000.

McLaughlin, Gary D.: *See—*
Webster, Noel E.; and McLaughlin, Gary D., 4,265,380, Cl. 223-85.000.

McLean, Peter J. Water purification system. 4,265,712, Cl. 202-166.000.

McMahon, Donald H., to Sperry Corporation. High speed holographic optical printing system. 4,265,509, Cl. 350-3.780.

McMaster, Tom; and Reid, Thomas. Pipe-bending apparatus. 4,265,106, Cl. 72-389.000.

McMillan, Andrew H.; and Chambors, John M., to Burroughs Corporation. Self configuring controller for the stacker area of a document sorting system. 4,265,446, Cl. 271-305.000.

McNaul, William F.; and Eberhardt, Paul R., to Cubic Corporation. Sidelobe discriminator. 4,266,226, Cl. 343-100.0LE.

McNeilab, Inc.: *See—*
Rasmussen, C. Royce; and Jacoby, Henry I., 4,265,900, Cl. 424-273.00R.
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McNeill, William H.; Feuersanger, Alfred E.; Haugsjaa, Paul O.; and Regan, Robert J., to GTE Laboratories Incorporated. Electromagnetic discharge apparatus with double-ended power coupling. 4,266,162, Cl. 315-39.000.

McTigue, Larry D.; and Pinson, George T., to Boeing Company, The. Roll compensated seeker head. 4,266,173, Cl. 318-585.000.

McVey, Kenneth E. Tip for dental aspirator. 4,265,621, Cl. 433-91.000.

MDH Industries, Inc.: *See—*
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Mead Corporation, The: *See—*
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Meier, Ernst, to Stopinc Aktiengesellschaft. Closure element of a slide closure for use in liquid melt containers. 4,265,379, Cl. 222-600.000.

Meiji Seika Kaisha Ltd.: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,265,654, Cl. 71-86.000.

Meindl, Peter: *See—*
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Meinicke, Hans-Peter, to Knorr-Bremse GmbH. Electropneumatic brake for rail vehicles. 4,265,489, Cl. 303-3.000.

Melan, Michael: *See—*
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Melendy, Harold A.: *See—*
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Mellen, Craig R. Asphalt spreading machine. 4,265,559, Cl. 401-48.000.

Meloeny, Michael R., to General Motors Corporation. Distributorless internal combustion engine ignition system. 4,265,211, Cl. 123-643.000.

Mendenhall, Robert L. Asphalt-aggregate drum mixing apparatus. 4,265,546, Cl. 366-7.000.

Meng, Ilse Heide Frieda, legal representative: *See—*
Horstmann, Harald; Meng, Karl-August, deceased; Meng, Matthias, legal representative; Seuter, Friedel; and Moller, Eike, 4,265,898, Cl. 424-270.000.

Meng, Karl-August, deceased: *See—*
Horstmann, Harald; Meng, Karl-August, deceased; Meng, Matthias, legal representative; Seuter, Friedel; and Moller, Eike, 4,265,898, Cl. 424-270.000.

Meng, Matthias, legal representative: *See—*
Horstmann, Harald; Meng, Karl-August, deceased; Meng, Matthias, legal representative; Seuter, Friedel; and Moller, Eike, 4,265,898, Cl. 424-270.000.

Menold, Herman E., to Bon Aqua, Inc. Water treating apparatus and methods. 4,265,754, Cl. 210-222.000.

Menold, Herman E.: *See—*
Zimmerman, George M., Sr.; and Menold, Herman E., 4,265,746, Cl. 210-695.000.

Mercer, Paul W.; and Stock, Howard P., to Boeing Company, The. Ultrasonic tape tie strapping method and apparatus. 4,265,687, Cl. 156-73.100.

Mercier, George E.: *See—*
Mandelcorn, Lyon; Dakin, Thomas W.; and Mercier, George E., 4,266,264, Cl. 361-318.000.

Merck & Co., Inc.: *See—*
Shen, Tsung-Ying; and Jones, Howard, 4,265,905, Cl. 424-304.000.

Merkenich, Karl: *See—*
Gohla, Werner; Hestermann, Klaus; Kandler, Joachim; Wasel-Nielen, Horst-Dieter; Sommer, Klaus; Rohlfs, Hans-Adolf; and Merkenich, Karl, 4,265,776, Cl. 252-98.000.

Merrill, Richard P., to Baltimore Aircoil Co., Inc. Injector type cooling tower having air discharge slots. 4,265,645, Cl. 55-257.0PV.

Merrow Machine Company, The: *See—*
Kelly, Edward A., 4,265,191, Cl. 112-288.000.

Merry, J. Bradford: *See—*
Blair, Gerald E.; Merry, J. Bradford; and Wylot, James M., 4,265,517, Cl. 350-358.000.

Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung: *See—*
Bielefeldt, Ernst-August, 4,265,640, Cl. 55-1.000.
Gorski, Ekkehard, 4,265,688, Cl. 156-73.100.

Metallurgical Processes Limited: *See—*
Gammon, Michael W., 4,265,644, Cl. 55-257.0NP.

Methode Electronics, Inc.: *See—*
Brown, Vincent B.; and Kozel, Charles A., 4,265,013, Cl. 29-739.000.

Metropolitan Sanitary District of Greater Chicago, The: *See—*
Kelada, Nabih P.; Lue-Hing, Cecil; and Lordi, David T., 4,265,857, Cl. 422-101.000.

Metten, Josef: *See—*
Birkenstock, Udo; Lachmann, Burkhard; Metten, Josef; and Schmidt, Herbert, 4,265,834, Cl. 564-421.000.

Metzger, Carl: *See—*
Krebs, Klaus-Werner; and Metzger, Carl, 4,265,832, Cl. 564-163.000.

Meunier, Gabriel. Bar screen filtering device. 4,265,750, Cl. 210-159.000.

Meyer, Burton C.; Morrison, Howard J.; and Licitis, Gunars, Jr., to Marvin Glass & Associates. Vehicle instrumentation and control apparatus. 4,265,047, Cl. 46-232.000.

Meyer, Hans. Internal measuring device. 4,265,026, Cl. 33-178.00R.

Meyer, John W., to Lockheed Missiles & Space Company, Inc. System for throttling and compensation for variable feedstock properties. 4,265,580, Cl. 414-217.000.

Meyer, Stanley A. Multi-stage solar storage system. 4,265,224, Cl. 126-436.000.

Meyercord Co., The: *See—*
Davis, Allan C., 4,265,355, Cl. 198-427.000.

Micaelli, Odile: *See—*
Gruffaz, Max; and Micaelli, Odile, 4,266,076, Cl. 560-247.000.

Micro Power Systems Inc.: *See—*
Hall, John H., 4,265,935, Cl. 427-89.000.

Mid-West Conveyor Co., Inc.: *See—*
Khodos, Yulian, 4,265,360, Cl. 198-774.000.

Midcontinent Specialties Manufacturing, Inc.: *See—*
Scott, James J., 4,265,571, Cl. 405-259.000.

Middleton, John N.: *See—*
Abbin, Joseph P., Jr.; Middleton, John N.; and Schildknecht, Harold E., 4,266,107, Cl. 200-61.530.

Midgelow, David: *See—*
Silk, George R.; and Midgelow, David, 4,265,330, Cl. 180-230.000.

Mihara, Akira: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,266,023, Cl. 435-28.000.

Miller, Dean E.: *See—*
Engel, William K.; and Miller, Dean E., 4,265,165, Cl. 91-490.000.

Miller, Frank E.; and Anderson, James J., to Whirlpool Corporation. Compactor control with selective pause operation. 4,266,174, Cl. 318-753.000.

Miller, Franklyn D.: *See—*
Muller, Werner C.; and Miller, Franklyn D., 4,266,027, Cl. 435-99.000.

Miller, George A.: *See—*
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,265,899, Cl. 424-270.000.

Miller, Grigory G.: *See—*
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.

Miller, Heide-Marie: *See—*
Heinzl, Joachim; Schlossbauer, Hubert; Miller, Heide-Marie; and Uhden, Irene, 4,266,280, Cl. 364-900.000.

Miller, Irving L.: *See*—
Chamoff, Martin E.; Miller, Irving L.; and Thorson, Donald L., 4,266,271, Cl. 364-200.000.
Miller, James A.: *See*—
Smith, James D.; and Miller, James A., 4,265,071, Cl. 53-492.000.
Miller, Robert E.; Kuo, Mau-Jung; and Lewis, Charles, Jr., to Monsanto Company. Method of culturing microcarrier supported cells. 4,266,032, Cl. 435-241.000.
Miller, Stephen D.: *See*—
Frederick, Louis J.; Hoke, Kenneth E.; Greene, Jerrold W.; and Miller, Stephen D., 4,265,578, Cl. 414-130.000.
Mills, King L.; and Johnson, Paul H., to Phillips Petroleum Company. Method for producing carbon black. 4,265,870, Cl. 423-450.000.
Mills, Ross N.: *See*—
Juliana, Anthony, Jr.; Koepcke, Richard W.; Mills, Ross N.; and Talke, Frank E., 4,266,232, Cl. 346-140.00R.
Mills, William R., Jr., to Mobil Oil Corporation. Pulsed radiation decay logging. 4,266,126, Cl. 250-264.000.
Min, Byung C.: *See*—
Regan, John F.; Pitroda, Satyan G.; and Min, Byung C., 4,266,292, Cl. 370-13.000.
Minami, Kiyoshi: *See*—
Yokomizo, Yuji; and Minami, Kiyoshi, 4,265,844, Cl. 264-61.000.
Minnesota Mining and Manufacturing Company: *See*—
Berglund, David E., 4,265,444, Cl. 271-207.000.
Butler, Louis; and Ogden, Paul H., 4,266,015, Cl. 430-527.000.
Close, James R., 4,265,953, Cl. 428-78.000.
Jonas, Walter K., 4,265,441, Cl. 271-19.000.
Price, Lawrence D., Jr., 4,265,153, Cl. 83-372.000.
Minolta Camera Kabushiki Kaisha: *See*—
Shibazaki, Kenji; Arai, Kenichi; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,265,440, Cl. 271-9.000.
Ueda, Hiroshi; and Saito, Mitsuru, 4,265,526, Cl. 354-106.000.
Watanabe, Yutaka, 4,265,142, Cl. 74-625.000.
Mir, Leon; and Zahka, Joseph, to Abcor, Inc. Process of removal of solvent vapors. 4,265,642, Cl. 55-85.000.
Miserlis, Constantine D.; Luke, Albert G., Jr.; Laber, Walter; and Guetlhuber, Friedrich, to Badger Company, Inc., The; and Deffendorfer Werft und Eisenbau. Method and apparatus for utilizing solar energy. 4,265,223, Cl. 126-435.000.
Mishakov, Vladimir N.: *See*—
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Mishra, Anupama, to Uniroyal Ltd. Isocyanurate products and polyurethanes therefrom. 4,265,798, Cl. 260-32.400.
Misra, Radhey S.: *See*—
Horwitz, Jerome P.; Neenan, John P.; Misra, Radhey S.; Rozhin, Jurij; Huo, Anne; and Philips, Kerstin D., deceased, 4,266,048, Cl. 536-27.000.
Misumi, Teruo: *See*—
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,265,991, Cl. 430-64.000.
Mita Industrial Company Limited: *See*—
Kouchi, Toshihiro; Takayama, Hiroshi; and Aizawa, Tatsuo, 4,265,992, Cl. 430-107.000.
Mitchell, Norris W., to Phillips Petroleum Company. Separation and processing of crude oil. 4,265,731, Cl. 208-80.000.
Mito, Ikuo: *See*—
Matsushita, Shigeo; Ishikawa, Ro; Kaede, Kazuhisa; Mito, Ikuo; and Sugimoto, Shigetoki, 4,265,513, Cl. 350-96.200.
Mitschke, Karl-Heinz; Geisler, Klaus; and Niederprum, Hans, to Bayer Aktiengesellschaft. Process for the preparation of hydroxyalkylperfluoroalkane sulphonamides. 4,265,831, Cl. 564-96.000.
Mitsubishi Chemical Industries, Ltd.: *See*—
Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, 4,265,816, Cl. 260-239.55C.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Takase, Akio; Tsutsumi, Takao; and Tsukahara, Hiroaki, 4,266,118, Cl. 219-492.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Date, Sukeaki; and Ebato, Seigo, 4,266,016, Cl. 430-527.000.
Morishita, Sadao; Okumura, Fumio; and Higuchi, Masahiro, 4,265,978, Cl. 428-537.000.
Yasuda, Nobu; Masuda, Masafumi; and Morita, Tomoichi, 4,265,969, Cl. 428-342.000.
Mitsuboshi Belting Ltd.: *See*—
Imamura, Junji, 4,265,627, Cl. 474-267.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Kugimiya, Kazuya, 4,265,949, Cl. 428-35.000.
Mizuno, Kenichi; Iwasaki, Hiroshi; and Nambu, Hirohiko, 4,266,081, Cl. 568-578.000.
Mix, Arthur L., Jr.: *See*—
Drago, Gary A.; Mix, Arthur L., Jr.; and Ritchie, Robert T., 4,266,231, Cl. 346-75.000.
Miyagaki, Katsunori; Noguchi, Shozo; and Hirakawa, Yukio, to Nippon Electric Co., Ltd. Semiconductor device having improved high frequency characteristics. 4,266,239, Cl. 357-84.000.
Miyake, Masaya; Nakano, Minoi; Yamamoto, Takaharu; and Hara, Akio, to Sumitomo Electric Industries, Ltd. Hard alloy containing molybdenum and tungsten. 4,265,662, Cl. 75-238.000.
Miyamori, Tamotsu: *See*—
Kaji, Hisatsugu; Kameyama, Iwawo; Hamaguti, Takashi; and Miyamori, Tamotsu, 4,265,869, Cl. 423-447.400.
Miyashita, Takeshi: *See*—
Hasegawa, Tetsuo; Kato, Shigeo; and Miyashita, Takeshi, 4,265,994, Cl. 430-107.000.
Miyawaki, Tetsuo: *See*—
Ohashi, Nobuo; Ono, Yutaka; Nohara, Kiyohiko; Shimomura, Junichi; and Miyawaki, Tetsuo, 4,265,679, Cl. 148-12.00E.
Mizuno, Kenichi; Iwasaki, Hiroshi; and Nambu, Hirohiko, to Mitsui Petrochemical Industries Ltd. Process for preparation of peroxides. 4,266,081, Cl. 568-578.000.
Mizuno, Tiaki, to Nippondenso Co., Ltd. Apparatus for controlling vehicle directional lamps. 4,266,212, Cl. 340-81.00R.
Mizusawa Kagaku Kogyo Kabushiki Kaisha: *See*—
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Imafuku, Shigehisa, 4,265,864, Cl. 423-121.000.
Mizutani, Toshio: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,266,074, Cl. 560-105.000.
Mobil Oil Corporation: *See*—
Arbit, Harold A.; and Tinger, Harold G., 4,265,960, Cl. 428-220.000.
Audeh, Costandi A.; Chang, Clarence D.; and Lang, William H., 4,265,735, Cl. 208-234.000.
Mills, William R., Jr., 4,266,126, Cl. 250-264.000.
Paul, Jill H., 4,265,907, Cl. 424-304.000.
Schwartz, Albert B., 4,265,787, Cl. 252-455.00Z.
Thompson, Francis, 4,266,188, Cl. 324-65.00R.
Moelants, Felix J.; and Depoorter, Henri, to AGFA-Gevaert N.V. Photographic materials containing light absorbing methine dyes. 4,266,014, Cl. 430-522.000.
Moen, Lenard E. Multiple nozzle fluid dispenser having uniform openings in an operating bar. 4,265,377, Cl. 222-486.000.
Moertel, George B., to Textron, Inc. Sewing aid for slide fastener and method. 4,265,190, Cl. 112-265.200.
Mojonnier Bros. Co.: *See*—
Mojonnier, Harry G.; and Skoli, Sigmund P., 4,265,167, Cl. 99-323.200.
Mojonnier, Harry G.; and Skoli, Sigmund P., to Mojonnier Bros. Co. Deoxygenating unit. 4,265,167, Cl. 99-323.200.
Moller, Eike: *See*—
Horstmann, Harald; Meng, Karl-August, deceased; Meng, Matthias, legal representative; Seuter, Friedel; and Moller, Eike, 4,265,898, Cl. 424-270.000.
Monarch Marking Systems, Inc.: *See*—
Jenkins, William A., 4,265,174, Cl. 101-111.000.
Monsanto Company: *See*—
Bach, Hartwig C., 4,265,970, Cl. 428-364.000.
Bollinger, Wayne A.; and Guay, Roger G., 4,265,763, Cl. 210-323.200.
Fields, Joseph E.; and Johnson, John H., 4,265,879, Cl. 424-78.000.
Kern, Roland J., 4,266,004, Cl. 430-269.000.
Kloek, James A., 4,265,657, Cl. 71-106.000.
Miller, Robert E.; Kuo, Mau-Jung; and Lewis, Charles, Jr., 4,266,032, Cl. 435-241.000.
Natarajan, Subbiah, 4,265,641, Cl. 55-2.000.
Sabacky, Milton J., 4,265,827, Cl. 260-440.000.
Monson, Clifford L. Rotary flooring surface treating device. 4,264,999, Cl. 15-321.000.
Montagnier, Luc: *See*—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,266,060, Cl. 546-64.000.
Montblanc-Simplo GmbH: *See*—
Herrnring, Gunther; and Nussen, Klaus P., 4,265,726, Cl. 204-202.000.
Montecatini Edison S.p.A.: *See*—
Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pricca, Angelo, 4,265,785, Cl. 252-429.00B.
Moody, Anthony G.; and Penneck, Richard J., to Raychem Limited. Polymeric blends containing a monoorganic polysiloxane resin. 4,265,801, Cl. 260-40.00R.
Moog GmbH: *See*—
Handte, Herbert, 4,265,024, Cl. 33-175.000.
Morel, Jean, to Verreries Mecaniques Champenoises. Rotary fire-finishing machine for glass articles. 4,265,651, Cl. 65-252.000.
Mori, Kazumasa: *See*—
Muto, Katsuya; Mori, Kazumasa; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,266,181, Cl. 322-28.000.
Mori, Koh: *See*—
Kawaguchi, Takeyuki; Taketani, Yutaka; Hayashi, Yuzuru; Ono, Tomoyoshi; and Mori, Koh, 4,265,745, Cl. 210-654.000.
Morigaki, Masakazu: *See*—
Sakai, Nobuo; Nakamura, Kotaro; Morigaki, Masakazu; and Furutachi, Nobuo, 4,266,020, Cl. 430-551.000.
Morimura, Syoji: *See*—
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,265,803, Cl. 260-45.8NZ.
Morin, Marius J., to Cutter Laboratories, Inc. Flow control device. 4,265,425, Cl. 251-9.000.
Morishita, Hirosada: *See*—
Kawanishi, Tsuneaki; Mukoh, Akio; and Morishita, Hirosada, 4,265,993, Cl. 430-107.000.

Morishita, Sadao; Okumura, Fumio; and Higuchi, Masahiro, to Mitsubishi Paper Mills, Ltd. Heat-sensitive recording paper improved in keeping quality of ground color. 4,265,978, Cl. 428-537.000.

Morita, Tomoichi: *See*—
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Moro, Gianni; and Picchi, Mario. System for simulating the condyle movements. 4,265,620, Cl. 433-69.000.

Morris, John F.; and Worrell, Robert V., to Smith International, Inc. Eccentric counterbore for diamond insert stud. 4,265,324, Cl. 175-329.000.

Morris, Winfred L.; Inman, Richard V.; and Buck, Otto, to Rockwell International Corporation. Fatigue detection utilizing acoustic harmonics. 4,265,120, Cl. 73-600.000.

Morrison, Charles F., Jr., to Vac-Tec Systems, Inc. Magnetically enhanced sputtering device. 4,265,729, Cl. 204-298.000.

Morrison, Howard J.: *See*—
Meyer, Burton C.; Morrison, Howard J.; and Licitis, Gunars, Jr., 4,265,047, Cl. 46-232.000.

Morton, Paul H. Hydropneumatic energy system. 4,265,599, Cl. 417-54.000.

Most, Allen F.: *See*—
Most, Lynn W.; and Most, Allen F., 4,266,193, Cl. 324-236.000.

Most, Lynn W.; and Most, Allen F. Means for detecting metal objects. 4,266,193, Cl. 324-236.000.

Moteruil, Gilbert: *See*—
Bordas, Robert; Lacharmoise, Paul; and Moteruil, Gilbert, 4,265,097, Cl. 62-438.000.

Motonami, Masanao: *See*—
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,265,480, Cl. 280-803.000.

Motorola, Inc.: *See*—
Bedard, Brian E.; and Boman, Bertho K., 4,266,206, Cl. 333-204.000.
Daniels, R. Gary; Musa, Fuad H.; Wilder, William B., Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,266,270, Cl. 364-200.000.
Hines, Kenneth W., 4,266,279, Cl. 364-726.000.

Motsenbocker, Don M. Saddle. 4,265,075, Cl. 54-44.000.

Moulin, Pierre A., to Schlumberger Technology Corp. Downhole cable tension measuring apparatus. 4,265,110, Cl. 73-151.000.

Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; and Baran, Joseph, to Burroughs Corporation. Protected document and method of making same. 4,265,469, Cl. 283-8.00B.

Moy, David, to Halcon Research and Development Corp. Catalytic process for the manufacture of urethanes. 4,266,070, Cl. 560-24.000.

Mrenna, Stephen A.; and Ellsworth, James P., to Westinghouse Electric Corp. Circuit breaker with improved arc extinguishing means. 4,266,210, Cl. 335-201.000.

Mueller, Karl F.: *See*—
Falk, Robert A.; and Mueller, Karl F., 4,266,080, Cl. 568-45.000.

Mueller-Mall, Rudolf; Wendel, Kurt; Geelhaar, Hans J.; and Melan, Michael, to BASF Aktiengesellschaft. Preparation of aqueous polyacrylate dispersions having improved flow characteristics. 4,265,796, Cl. 260-29.60R.

Mukoh, Akio: *See*—
Kawanishi, Tsuneaki; Mukoh, Akio; and Morishita, Hirosada, 4,265,993, Cl. 430-107.000.

Mulder, James R.: *See*—
Kretchman, Gerald L.; Mulder, James R.; and Pielemeier, John W., 4,265,100, Cl. 68-12.00R.

Muller, Gerhard; and Rausch, Werner, to Oxy Metal Industries Corporation. Phosphatizing prior to cathodic electropainting. 4,265,677, Cl. 148-6.15Z.

Muller, Thomas P., to Caterpillar Tractor Co. Guard structure for hydraulic conduits of a mobile apparatus. 4,265,063, Cl. 52-115.000.

Muller, Werner C.; and Miller, Franklyn D., to National Distillers and Chemical Corp. Process for the hydrolysis of starch and fermentable hydrolysates obtained therefrom. 4,266,027, Cl. 435-99.000.

Munster, Gerhard; Riess, Gerhard; and Russow, Jurgen, to Hoechst Aktiengesellschaft. Process for the manufacture of phosphorus pentachloride. 4,265,865, Cl. 423-300.000.

Munter, Arnold M.; and Ahlgren, David W., to Jeno's, Inc. Process for producing a food product. 4,265,919, Cl. 426-283.000.

Munzer, Rudolf: *See*—
Dias, Francisco J.; Gupta, Ashok K.; Gyarmati, Erno; Kampel, Marian; Luhleich, Hartmut; Munzer, Rudolf; and Naoumidis, Aristidis, 4,265,843, Cl. 264-57.000.

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Murase, Ichiki: *See*—
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Murata, Tomoji: *See*—
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Musa, Fuad H.: *See*—
Daniels, R. Gary; Musa, Fuad H.; Wilder, William B., Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,266,270, Cl. 364-200.000.

Muscatell, Steven C. Beverage and liquified food belt. 4,265,381, Cl. 224-148.000.

Muskulus, Willi, to Balzer & Droll KG. Device for collecting windings in stators or the like. 4,265,012, Cl. 29-736.000.

Muto, Katsuya; Mori, Kazumasa; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, to Nippondenso Co., Ltd. Voltage regulator system for vehicle generator. 4,266,181, Cl. 322-28.000.

N. V. Optische Industrie "De Oude Delft": *See*—
Duinker, Simon, 4,266,136, Cl. 250-445.00T.

Naf, Ferdinand; and Decorzant, Rene, to Firmenich, S.A. Bicyclic aldehyde derivatives, their use as perfuming and flavoring ingredients and process for their preparation. 4,266,075, Cl. 560-120.000.

Nagai, Toshiaki: *See*—
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,266,023, Cl. 435-28.000.

Nagano, Masashi, to Shimano Industrial Company, Limited. Operating cable. 4,265,140, Cl. 139-501.00R.

Nagaoka, Joji: *See*—
Ishiguro, Shoji; Shishido, Tadao; Sakai, Takeo; Sasaki, Noboru; Nagaoka, Joji; and Matsuki, Minoru, 4,266,018, Cl. 430-550.000.

Nagase, Toshio: *See*—
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Nagata, Kenzo: *See*—
Shibazaki, Kenji; Arai, Kenichi; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, 4,265,440, Cl. 271-9.000.

Nagatomo, Shigeru; and Hori, Kiyotaka, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,266,010, Cl. 430-355.000.

Nagel, George W., to Westinghouse Electric Corp. Flue damper control system. 4,265,394, Cl. 236-1.00G.

Naha, Alan B.: *See*—
Lucki, John L.; and Naha, Alan B., 4,265,619, Cl. 433-54.000.

Nahta, Roop C., to GAF Corporation. Method of dispersing bundles of glass fibers for making glass fiber mats by the wet-laid process. 4,265,704, Cl. 162-156.000.

Naito, Hideki: *See*—
Kobayashi, Hidetoshi; Tanaka, Mitsugu; Inouye, Kozo; and Naito, Hideki, 4,266,019, Cl. 430-551.000.

Naito, Hiroyuki: *See*—
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Imafuku, Shigehisa, 4,265,864, Cl. 423-121.000.

Naito, Kazuyoshi: *See*—
Shimakata, Ryuji; and Naito, Kazuyoshi, 4,265,102, Cl. 72-58.000.

Najer, Henry; and Obitz, Daniel, to Synthelabo. Propionamidoxime derivatives. 4,265,911, Cl. 424-326.000.

Nakagawa, Katsumi: *See*—
Hirai, Yutaka; Komatsu, Toshiyuki; Nakagawa, Katsumi; Misumi, Teruo; and Fukuda, Tadaji, 4,265,991, Cl. 430-64.000.

Nakamatsu, Hiroshi: *See*—
Imanaka, Yoshihiko; Nakamatsu, Hiroshi; Horike, Akihiro; Saito, Yoichi; and Iwata, Kaoru, 4,266,053, Cl. 544-196.000.

Nakamura, Hitoshi: *See*—
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,265,388, Cl. 228-135.000.

Nakamura, Katsumi; and Kitamura, Kumpei, to Kirin Beer Kabushiki Kaisha. Process for preparation of prodigiosin. 4,266,028, Cl. 435-118.000.

Nakamura, Kazuo: *See*—
Tokutomi, Seijiro; Jyojiki, Masao; and Nakamura, Kazuo, 4,265,520, Cl. 354-23.00D.

Nakamura, Kenichi: *See*—
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,188, Cl. 112-158.00B.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,189, Cl. 112-158.00E.

Nakamura, Kotaro: *See*—
Sakai, Nobuo; Nakamura, Kotaro; Morigaki, Masakazu; and Furutachi, Nobuo, 4,266,020, Cl. 430-551.000.

Nakamura, Shohei; and Suenaga, Yoshiyuki, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive elastomeric composition. 4,266,005, Cl. 430-271.000.

Nakamura, Shunji: *See*—
Toyono, Tsutomu; Nakamura, Shunji; Kanbe, Junichiro; Tamura, Yasuyuki; and Takahashi, Tohru, 4,265,197, Cl. 118-657.000.

Nakano, Minol: *See*—
Miyake, Masaya; Nakano, Minol; Yamamoto, Takaharu; and Hara, Akio, 4,265,662, Cl. 75-238.000.

Nakao, Hideyuki, to Kabushiki Kaisha Daini Seikosha. Calendar correcting mechanism. 4,266,289, Cl. 368-35.000.

Nakayama, Masanobu: *See*—
Goto, Hajime; Amemiya, Ikuzo; and Nakayama, Masanobu, 4,265,652, Cl. 65-273.000.

Nalco Chemical Company: *See*—
Allain, Ronald J.; and Maniscalco, Joseph P., 4,266,068, Cl. 556-430.000.

Nambu, Hirohiko: *See*—
Mizuno, Kenichi; Iwasaki, Hiroshi; and Nambu, Hirohiko, 4,266,081, Cl. 568-578.000.

Naoumidis, Aristidis: *See*—
Dias, Francisco J.; Gupta, Ashok K.; Gyarmati, Erno; Kampel, Marian; Luhleich, Hartmut; Munzer, Rudolf; and Naoumidis, Aristidis, 4,265,843, Cl. 264-57.000.

Naruns, Laimons; Terry, Dennis W.; and Stellfox, Samuel K., to Dravo Corporation. Bulk material unloader. 4,265,579, Cl. 414-138.000.

Nash, David D., to Durapipe Limited. Pipe joint. 4,265,471, Cl. 285-111.000.

Nash, Edward M.; and Johnson, Edward M., Jr., to Triangle Corporation, The. Work bench structure. 4,265,283, Cl. 144-286.00R.

Nashua Corporation: *See*—
Cormier, Raymond G.; and Allen, Walter C., 4,265,442, Cl. 271-127.000.

Natarajan, Subbiah, to Monsanto Company. Method and apparatus for particle charging and particle collecting. 4,265,641, Cl. 55-2.000.
National Can Coporation: *See—*
Sauer, Donald G., 4,265,852, Cl. 264-512.000.
National Distillers and Chemical Corp.: *See—*
McClain, Dorothee M., 4,265,799, Cl. 260-33.40R.
Muller, Werner C.; and Miller, Franklyn D., 4,266,027, Cl. 435-99.000.
National Semiconductor Corp.: *See—*
Hobrecht, Stephen W.; Skawinski, Henry M.; Chiu, Kh; and Hee, Wong, 4,266,254, Cl. 360-62.000.
Nawman, Rollie B., to Benner-Nawman, Inc. Protective telephone stand. 4,265,499, Cl. 312-100.000.
Nawrata, Gunter, to AKG Akustische u. Kino-gerate Gesellschaft m.b.H. Process of forming a sound needle and sound needle construction. 4,265,698, Cl. 156-630.000.
NCR Corporation: *See—*
Amacher, Gene L.; and Dickover, Wesley D., 4,266,145, Cl. 307-200.00A.
Neal, Danny M.: *See—*
Clancy, Douglas E.; Johnson, Carl F., McCray, William R.; and Neal, Danny M., 4,265,554, Cl. 400-316.000.
Neco AG: *See—*
Polli, Claudio, 4,266,230, Cl. 346-22.000.
Neel, N. Ray: *See—*
Rice, Harold E.; and Neel, N. Ray, 4,265,229, Cl. 128-66.000.
Neely, James W.: *See—*
Beasley, Glenn H.; Chong, Berni P.; Ford, Warren T.; and Neely, James W., 4,265,768, Cl. 210-682.000.
Neenan, John P.: *See—*
Horwitz, Jerome P.; Neenan, John P.; Misra, Radhey S.; Rozhin, Jurij; Huo, Anne; and Philips, Kerstin D., deceased, 4,266,048, Cl. 536-27.000.
Neff, Robert K.; and Hillstead, David P., to ACF Industries, Inc. Damping railway car truck. 4,265,182, Cl. 105-197.00D.
Nelsen, M. Dean: *See—*
Harp, Marlyn F.; Diepenbrock, James L., Jr.; and Nelsen, M. Dean, 4,265,955, Cl. 428-116.000.
Nelson, Alfred M.; and Davis, David L., to AM International, Inc. Toner applicator apparatus. 4,265,196, Cl. 118-50.000.
Nelson, David A., Jr.; and Ruoff, Arthur L., to Cornell Research Foundation, Inc. Diamond targets for producing high intensity soft x-rays and a method of exposing x-ray resists. 4,266,138, Cl. 250-492.00A.
Nemiroff, Robert V.: *See—*
Liebman, Theodore; and Nemiroff, Robert V., 4,265,159, Cl. 84-464.00R.
Neptune Glenfield Limited: *See—*
Lambie, John W., 4,265,457, Cl. 277-105.000.
Neradka, Vincent F.; and Manion, Francis M. Servovalve having fluidic actuator. 4,265,162, Cl. 91-3.000.
Nes, Aasmund E.; and Slevolden, Sverre, to Norsk Hydro a.s. Process for manufacture of strip-casted Al-sheet material with improved mechanical and thermomechanical qualities. 4,265,676, Cl. 148-2.000.
Newton, Alwin B., to Borg-Warner Corporation. Evaporator feed and control system. 4,265,093, Cl. 62-198.000.
Newton, Harry V., to SWS Silicones Corporation. Stabilized heat curable silicone elastomers. 4,265,800, Cl. 260-37.0SB.
Newton, Roger F.: *See—*
Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., 4,265,891, Cl. 424-244.000.
Ng, Ting F. Apparatus for producing electrical energy from ocean waves. 4,266,143, Cl. 290-53.000.
Nguyen, Vu H.: *See—*
O'Rell, Dennis D.; Palmer, Nigel I.; and Nguyen, Vu H., 4,265,985, Cl. 429-225.000.
Nichols, William K. Grain drill with oscillating planter bar. 4,265,186, Cl. 111-85.000.
Nicholson, Denzel A.: *See—*
Boyer, Stanton L.; and Nicholson, Denzel A., 4,265,777, Cl. 252-113.000.
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., to Velsicol Chemical Corporation. Novel phosphoric acid. 4,265,791, Cl. 252-8.100.
Nicia, Antonius J. A.; and Potters, Cornelis J. T., to U.S. Philips Corporation. Detachable connector for optical fibres. 4,265,511, Cl. 350-96.180.
Nickel, Horst; and Schundehutte, Karl H., to Bayer Aktiengesellschaft. Azo dyestuffs. 4,265,813, Cl. 260-170.000.
Nicolaus, Walter: *See—*
Hesse, Anton; Lechtken, Peter; Nicolaus, Walter; and Scholz, Dankmar, 4,265,723, Cl. 204-159.230.
Niedermeyer, William P. Web-cutting process. 4,266,112, Cl. 219-121.0LN.
Niederprum, Hans: *See—*
Mitschke, Karl-Heinz; Geisler, Klaus; and Niederprum, Hans, 4,265,831, Cl. 564-96.000.
Nielsen, Arthur R.: *See—*
Schillinger, Joseph F.; and Nielsen, Arthur R., 4,265,366, Cl. 221-33.000.
Nielsen, Grethe C.: *See—*
Tang, Peter; Nielsen, Grethe C.; Gibson, Keith; Aunstrup, Knud; and Schiff, Hans, 4,266,031, Cl. 435-188.000.
Niemela, Paul W., to Singer Company, The. Brush holder assembly. 4,266,155, Cl. 310-239.000.
Nihon Technical Kabushiki Kaisha: *See—*
Ohshima, Hideki, 4,265,128, Cl. 74-10.150.
Nimura, Takayasu: *See—*
Muto, Katsuya; Mori, Kazumasa; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,266,181, Cl. 322-28.000.
Nippon Air Brake Co., Ltd.: *See—*
Ryuichi, Tanaka, 4,265,493, Cl. 303-24.00C.
Nippon Electric Co., Ltd.: *See—*
Matsushita, Shigeo; Ishikawa, Ro; Kaede, Kazuhisa; Mito, Ikuo; and Sugimoto, Shigetoki, 4,265,513, Cl. 350-96.200.
Miyagaki, Katsunori; Noguchi, Shozo; and Hirakawa, Yukio, 4,266,239, Cl. 357-84.000.
Ueda, Kazuyoshi, 4,266,236, Cl. 357-34.000.
Nippon Kasei Chemical Co., Ltd.: *See—*
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,266,055, Cl. 544-221.000.
Nippon Kinzoku Co., Ltd.: *See—*
Ohashi, Nobuo; Ono, Yutaka; Nohara, Kiyohiko; Shimomura, Junichi; and Miyawaki, Tetsuo, 4,265,679, Cl. 148-12.00E.
Nippon Oil Company, Ltd.: *See—*
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,265,793, Cl. 260-23.0EP.
Nippon Paint Co., Ltd.: *See—*
Kimura, Masao; Sobata, Tamotu; and Wada, Hideo, 4,265,780, Cl. 252-156.000.
Nippon Sheet Glass Co., Ltd.: *See—*
Ikeda, Yoshirou; and Kaite, Yoshikazu, 4,265,667, Cl. 106-47.00Q.
Nippon Soken, Inc.: *See—*
Arao, Umeo; Egami, Tsuneyuki; Kosuda, Tooru; and Takeuchi, Yasuhiro, 4,265,163, Cl. 91-361.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
Tateishi, Kazuyoshi; Hoshino, Yasushi; and Takano, Rikuo, 4,265,989, Cl. 430-57.000.
Nippon Zeon Co., Ltd.: *See—*
Yabe, Masao; Tatsuta, Sumitaka; Ochiai, Takeji; Suzuki, Tamotsu; and Sekiya, Masayoshi, 4,265,946, Cl. 427-393.500.
Nippondenso Co., Ltd.: *See—*
Mizuno, Tiaki, 4,266,212, Cl. 340-81.00R.
Muto, Katsuya; Mori, Kazumasa; Mase, Akira; Nimura, Takayasu; Itoh, Katsumi; and Akita, Yoshio, 4,266,181, Cl. 322-28.000.
Nishida, Yoshikazu: *See—*
Tanaka, Tamotsu; Kato, Michio; Uematsu, Masataka; Nishida, Yoshikazu; and Hosokawa, Shuji, 4,265,320, Cl. 173-12.000.
Nishimoto, Yoshiharu; and Yamazaki, Kengo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method of molding tubular laminate. 4,265,693, Cl. 156-218.000.
Nishimura, Shigeyuki: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,266,064, Cl. 546-345.000.
Nishimura, Shinichi; and Izumida, Satoshi, to Nissan Motor Company Limited; and Ikeda Bussan Co. Ltd. Head-rest adjusting device. 4,265,482, Cl. 297-391.000.
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, to Ishihara Sangyo Kaisha Ltd. Process for producing chloro β-trifluoromethylpyridines. 4,266,064, Cl. 546-345.000.
Nishizawa, Jun-ichi, to Zaidan Hojin Handotai Kenkyu Shinkokai. Semiconductor device having high-speed operation and integrated circuit using same. 4,266,238, Cl. 357-48.000.
Nissan Motor Company, Limited: *See—*
Kuramoto, Minoru, 4,265,341, Cl. 188-73.300.
Nishimura, Shinichi; and Izumida, Satoshi, 4,265,482, Cl. 297-391.000.
Nisshin Flour Milling Co., Ltd.: *See—*
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,265,910, Cl. 424-325.000.
Nitro Nobel AB: *See—*
Lundborg, Hans; Kristensen, Leif; and Nyqvist, Stig, 4,265,177, Cl. 102-275.900.
Nix, Douglas E. Beverage container receiving and storing apparatus. 4,265,352, Cl. 194-4.00D.
Noack, Jurgen. Relating to cold sheet metal roll forming apparatus. 4,265,103, Cl. 72-180.000.
Nobile, Arthur, to Kosinski, Robert E., a part interest. Aurothiosteroids. 4,265,823, Cl. 260-397.400.
Nodov, Eugene: *See—*
Cox, Arthur; Thiel, John A.; and Nodov, Eugene, 4,266,252, Cl. 358-293.000.
Noguchi, Hironori; and Sakuma, Kenji, to M. T. I. Corporation. Contour measuring apparatus. 4,265,022, Cl. 33-174.00P.
Noguchi, Kosaku; and Komi, Nobuyuki, to Koa Oil Company, Limited. Process for calcining coke. 4,265,710, Cl. 201-27.000.
Noguchi, Shozo: *See—*
Miyagaki, Katsunori; Noguchi, Shozo; and Hirakawa, Yukio, 4,266,239, Cl. 357-84.000.
Nohara, Kiyohiko: *See—*
Ohashi, Nobuo; Ono, Yutaka; Nohara, Kiyohiko; Shimomura, Junichi; and Miyawaki, Tetsuo, 4,265,679, Cl. 148-12.00E.
Nola, Frank J., to United States of America, National Aeronautics and Space Administration. Power factor control system for AC induction motors. 4,266,177, Cl. 318-810.000.
Nolan, Mary E.; Kosek, John A.; and La Conti, Anthony B., to General Electric Company. Gas sensing and measuring device and process using catalytic graphite sensing electrode. 4,265,714, Cl. 204-1.00T.

Noomen, Arie: *See—*
Schuurink, Pieter H. J.; and Noomen, Arie, 4,265,973, Cl. 428-424.800.

Nordisk Insulinlaboratorium: *See—*
Kofod, Hans, 4,265,884, Cl. 424-177.000.

Nordson Corporation: *See—*
Crum, Gerald W.; and Macartney, Lawrence J., 4,265,858, Cl. 422-129.000.

Norsk Hydro a.s.: *See—*
Nes, Aasmund E.; and Slevolden, Sverre, 4,265,676, Cl. 148-2.000.

Northern Telecom Limited: *See—*
Garner, John N., 4,265,686, Cl. 156-48.000.
Kayalioglu, Inanc; Roman, Vincent G.; and Lewandowski, Ted J., 4,266,099, Cl. 179-16.0EA.

Nose, Noriyuki: *See—*
Matsumoto, Kazuya; Matsumura, Susumu; Nose, Noriyuki; and Okuno, Youichi, 4,265,522, Cl. 354-53.000.

Novak, Albert P. Device to automatically screen incoming telephone calls, determine the identity of the caller and process the call accordingly. 4,266,098, Cl. 179-5.500.

Novo Industri A/S: *See—*
Branner-Jorgensen, Sven, 4,266,029, Cl. 435-176.000.
Tang, Peter; Nielsen, Grethe C.; Gibson, Keith; Aunstrup, Knud; and Schiff, Hans, 4,266,031, Cl. 435-188.000.

Novo Products, Inc.: *See—*
Smallegan, Jon M., 4,265,030, Cl. 34-104.000.

Novopress GmbH Pressen und Presswerkzeuge & Co. KG: *See—*
Dischler, Helmut, 4,265,347, Cl. 192-56.00R.

Nowak, Michael T., to Celanese Corporation. Radiation-curable coated article having moisture barrier propetes. 4,265,976, Cl. 428-486.000.

Nuovo Pignone, S.p.A.: *See—*
Vinciguerra, Costantino, 4,265,427, Cl. 251-315.000.

Nusco Kabushiki Kaisha: *See—*
Hayashi, Shigeki; and Okamoto, Takemitsu, 4,266,276, Cl. 364-475.000.

Nussen, Klaus P.: *See—*
Herrnring, Gunther; and Nussen, Klaus P., 4,265,726, Cl. 204-202.000.

Nusz, Thomas R.: *See—*
Schreyer, Kenneth D.; Leverentz, Earl T.; Nusz, Thomas R.; and Benton, Reuben P., 4,265,181, Cl. 105-150.000.

N.V. Optische Industrie "De Oude Delft": *See—*
Versteeg, Frits J.; and Groeneweg, Abraham, 4,266,129, Cl. 250-330.000.

Nybo, Reidar, to A/S Akers Mek. Verksted. Riser device. 4,265,567, Cl. 405-195.000.

Nylen, Ulf T. G.; Olsson, Lars-Goran; Paulsson, Bengt G.; Qvarnstrom, Lars A. G.; and Wichers, Rolf H. L., to Gambro AB. Method and apparatus for the measurement of the concentration of a compound in a liquid medium. 4,266,021, Cl. 435-14.000.

Nylund, Theodore W.: *See—*
Doss, Glenn D.; and Nylund, Theodore W., 4,265,010, Cl. 29-402.010.

Nyqvist, Stig: *See—*
Lundborg, Hans; Kristensen, Leif; and Nyqvist, Stig, 4,265,177, Cl. 102-275.900.

O&K Orenstein & Koppel Aktiengesellschaft: *See—*
Kirchhoff, Bernhard, 4,265,031, Cl. 34-108.000.

O'Banion, John D., to E-Z Fill Corporation. Self venting gas cap. 4,265,752, Cl. 210-172.000.

Obata, Katsuhiro; and Koizumi, Shigenobu, to Iida Sankyo Co., Ltd. Electromagnetic swing device. 4,266,291, Cl. 368-168.000.

Oberrecht, David A., to Dover Corporation. Removable rack for a liquid dispensing nozzle. 4,265,281, Cl. 141-392.000.

Obitz, Daniel: *See—*
Najer, Henry; and Obitz, Daniel, 4,265,911, Cl. 424-326.000.

Obrezkov, Alexandr I.: *See—*
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.

Occidental Research Corporation: *See—*
Frankiewicz, Theodore C., 4,265,636, Cl. 44-1.00C.

Oce-Nederland B.V.: *See—*
Extra, Piet M. J.; van den Honert, Taco H. J.; and van Lieshout, Jacobus J., 4,265,997, Cl. 430-122.000.

Oce-van der Grinten N.V.: *See—*
Kessels, Cornelis P. H., 4,265,988, Cl. 430-56.000.

Ochiai, Takeji: *See—*
Yabe, Masao; Tatsuta, Sumitaka; Ochiai, Takeji; Suzuki, Tamotsu; and Sekiya, Masayoshi, 4,265,946, Cl. 427-393.500.

O'Doherty, George O. P., to Eli Lilly and Company. 2-Oxybenzimidazoline compounds. 4,265,901, Cl. 424-273.00B.

Offermann, Ludwig: *See—*
Bocsanczy, Janos; Offermann, Ludwig; and Stalherm, Dieter, 4,265,709, Cl. 201-4.000.

Offshore Company, The: *See—*
Herrmann, Robert P.; Pease, Floyd T.; and Ray, Donald R., 4,265,568, Cl. 405-196.000.

O'Flanagan, Patrick T.: *See—*
Curtiss, Walter W., Jr.; and O'Flanagan, Patrick T., 4,265,293, Cl. 152-354.00R.

Ogawa, Hiroshi: *See—*
Tamai, Yasuo; and Ogawa, Hiroshi, 4,265,931, Cl. 427-48.000.

Ogawa, Hisashi: *See—*
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,265,480, Cl. 280-803.000.

Ogden, Paul H.: *See—*
Butler, Louis; and Ogden, Paul H., 4,266,015, Cl. 430-527.000.

Ohara, Katsunobu; and Yoshida, Nobutoshi, to Canon Kabushiki Kaisha. Electrophotography. 4,265,531, Cl. 355-3.0SC.

Ohara, Naoki: *See—*
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,188, Cl. 112-158.00B.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,189, Cl. 112-158.00E.

Ohashi, Nobuo; Ono, Yutaka; Nohara, Kiyohiko; Shimomura, Junichi; and Miyawaki, Tetsuo, to Kawasaki Steel Corporation; and Nippon Kinzoku Co., Ltd. Process for producing stainless steels for spring having a high strength and an excellent fatigue resistance. 4,265,679, Cl. 148-12.00E.

Ohio Nuclear, Inc.: *See—*
Kuwik, John J.; Braden, Arthur B.; Taylor, Samuel K.; and Covic, John, 4,266,135, Cl. 250-445.00T.

Ohmiya, Akio: *See—*
Furusawa, Motoyoshi; Horio, Motohiko; Togashi, Shyuichi; and Ohmiya, Akio, 4,265,412, Cl. 242-71.400.

Ohno, Isao: *See—*
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,266,074, Cl. 560-105.000.

Ohno, Nobuo: *See—*
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,266,074, Cl. 560-105.000.
Kasamatsu, Kiyoshi; Ohsumi, Tadashi; Itaya, Nobushige; Ohno, Nobuo; and Kato, Takashi, 4,265,906, Cl. 424-304.000.

Ohsawa, Kazuo: *See—*
Suzuki, Shigeru; and Ohsawa, Kazuo, 4,266,128, Cl. 250-311.000.

Ohshima, Hideki, to Nihon Technical Kabushiki Kaisha. Turret type frequency selector. 4,265,128, Cl. 74-10.150.

Ohshima, Shigemitsu: *See—*
Iida, Masaaki; Kato, Chihiro; Ohshima, Shigemitsu; and Yazawa, Yoshiyuki, 4,265,826, Cl. 260-428.000.

Ohsumi, Tadashi: *See—*
Kasamatsu, Kiyoshi; Ohsumi, Tadashi; Itaya, Nobushige; Ohno, Nobuo; and Kato, Takashi, 4,265,906, Cl. 424-304.000.

Ohta, Hiromi: *See—*
Satoda, Hajime; Ohta, Hiromi; and Ushirokajitani, Yoshiyuki, 4,265,614, Cl. 431-329.000.

Ohtani, Masami: *See—*
Chiyoda, Tsuneyuki; and Ohtani, Masami, 4,265,603, Cl. 418-2.000.

Ohtani, Yoshio, to Diesel Kiki Co., Ltd. Rotational speed detecting apparatus. 4,266,192, Cl. 324-168.000.

Okamoto, Takemitsu: *See—*
Hayashi, Shigeki; and Okamoto, Takemitsu, 4,266,276, Cl. 364-475.000.

Okubo, Masahisa. Combined plaything and receptacle for infants. 4,265,461, Cl. 280-1.130.

Okumura, Fumio: *See—*
Morishita, Sadao; Okumura, Fumio; and Higuchi, Masahiro, 4,265,978, Cl. 428-537.000.

Okuno, Yoshitoshi: *See—*
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,266,074, Cl. 560-105.000.

Okuno, Youichi: *See—*
Matsumoto, Kazuya; Matsumura, Susumu; Nose, Noriyuki; and Okuno, Youichi, 4,265,522, Cl. 354-53.000.

Okushima, Hiromi; Fujimori, Shinichiro; Furuya, Rikizo; and Hayakawa, Shuzo, to Mitsubishi Chemical Industries, Ltd. Process for preparing steroid-carboxylates. 4,265,816, Cl. 260-239.55C.

Olin Corporation: *See—*
Gaule, Gerhart K.; Yarwood, John C.; Tyler, Derek E.; and Yun, Ik Y., 4,265,294, Cl. 164-49.000.

Olofsson, Mats: *See—*
Buhler, Marcel; Olofsson, Mats; and Fosseux, Pierre-Yves, 4,265,924, Cl. 426-582.000.

Olsson, Lars-Goran: *See—*
Nylen, Ulf T. G.; Olsson, Lars-Goran; Paulsson, Bengt G.; Qvarnstrom, Lars A. G.; and Wichers, Rolf H. L., 4,266,021, Cl. 435-14.000.

Olympus Optical Co., Ltd.: *See—*
Banno, Taiichi; and Ida, Hideaki, 4,265,544, Cl. 356-427.000.

O'Mahony, Gerard. Demodulator of polyphase voltages interfering among themselves. 4,266,153, Cl. 310-111.000.

Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, to Nippon Oil Company, Ltd. Cathode-precipitating electrodeposition coating composition. 4,265,793, Cl. 260-23.0EP.

Ono, Tomoyoshi: *See—*
Kawaguchi, Takeyuki; Taketani, Yutaka; Hayashi, Yuzuru; Ono, Tomoyoshi; and Mori, Koh, 4,265,745, Cl. 210-654.000.

Ono, Yutaka: *See—*
Ohashi, Nobuo; Ono, Yutaka; Nohara, Kiyohiko; Shimomura, Junichi; and Miyawaki, Tetsuo, 4,265,679, Cl. 148-12.00E.

Onoda, Hajime, to Kimmon Manufacturing Co., Ltd. Low meter system provided with a pulse generator. 4,265,127, Cl. 73-861.780.

Oppenberg, Rolf, to Deutsche Babcock Aktiengesellschaft. Safety device for an oil burner. 4,265,613, Cl. 431-121.000.

Oppenhuizen, Simon W.: *See*—
Blodee, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., 4,265,502, Cl. 312-109.000.

Orchard, Edgar L., to Orco Sales Co. Inc. Box construction. 4,265,393, Cl. 229-40.000.

Orco Sales Co. Inc.: *See*—
Orchard, Edgar L., 4,265,393, Cl. 229-40.000.

O'Rell, Dennis D.; Palmer, Nigel I.; and Nguyen, Vu H., to W. R. Grace & Co. Lead acid battery with separator having long fibers. 4,265,985, Cl. 429-225.000.

Oreshkina, Alla E.: *See*—
Sarishvili, Naskid G.; Oreshkina, Alla E.; and Storchevoi, Evgeny N., 4,265,914, Cl. 426-13.000.

Orr, J. C.: *See*—
Hatton, C. W.; Orr, J. C.; and Stevenson, R. G., 4,265,593, Cl. 416-183.000.

Osada, Shiroyoshi. Silo. 4,265,065, Cl. 52-197.000.

Oshel, J. Bryan; and Bennett, Robert J., to International Harvester Company. Methods for loading an air transportable trailer aboard an aircraft and for unloading it therefrom. 4,265,588, Cl. 414-786.000.

Ostrowski, Richard C., to Caterpillar Tractor Co. Investment casting mold forming apparatus. 4,265,296, Cl. 164-165.000.

Ota, Tomio: *See*—
Futami, Yoshinori; and Ota, Tomio, 4,266,290, Cl. 368-76.000.

Otis Engineering Corporation: *See*—
Stout, Gregg W., 4,265,306, Cl. 166-237.000.

Otisca Industries, Ltd.: *See*—
Smith, Clay D.; and Keller, Douglas V., Jr., 4,265,737, Cl. 209-3.000.

Otsuka, Yasuhiro: *See*—
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,265,930, Cl. 427-34.000.

Otsuki, Yutaka: *See*—
Omika, Hiroyoshi; Hara, Hajime; Otsuki, Yutaka; Araki, Yoshihiko; and Aoyama, Kazuho, 4,265,793, Cl. 260-23.0EP.

Ott, Walter R.: *See*—
Anderson, George R.; Ott, Walter R.; Smoke, Edward J.; Easter, Ross A.; and Sholl, Jeffrey J., 4,266,108, Cl. 219-10.55E.

Owen-Illinois, Inc.: *See*—
Friberg, Nelson, 4,266,123, Cl. 250-205.000.

Owen, Peter W.; Harmon, Zita K.; and Tomalia, Donald A., to Dow Chemical Company, The. Process for the preparation of N-(haloalkyl)sulfonamide. 4,265,825, Cl. 260-401.000.

Owens-Corning Fiberglas Corporation: *See*—
Carruth, Grant F.; Coffey, Fred S.; and Fulmer, Ray M., 4,265,151, Cl. 83-102.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,265,563, Cl. 404-75.000.

Owens-Illinois, Inc.: *See*—
Amberg, Stephen W.; and Hadl, Clyde F., 4,265,357, Cl. 198-460.000.

Oxy Metal Industries Corporation: *See*—
Muller, Gerhard; and Rausch, Werner, 4,265,677, Cl. 148-6.15Z.
Rosegren, Donald R.; Johnson (Bulsiewicz), Noreen C.; and Stevens, Peter, 4,265,715, Cl. 204-46.00R.

Ozaki, Juro: *See*—
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,265,388, Cl. 228-135.000.

Paaren, Herbert E.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,265,822, Cl. 260-397.200.

Pace, Gary W.; and Holding, Trevor J., to Talres Development (N.A.) N.V. Polymer solutions for use in oil recovery containing a complexing agent for multivalentions. 4,265,673, Cl. 106-177.000.

Pacella, Angelo M. Portable inhalator device. 4,265,236, Cl. 128-203.230.

Pahnke, Bror E.: *See*—
Eriksson, Bengt O.; and Pahnke, Bror E., 4,265,430, Cl. 266-54.000.

Pai, Damodar M.: *See*—
Stolka, Milan; Pai, Damodar M.; and Yanus, John F., 4,265,990, Cl. 430-59.000.

Palara, Sergio, to SGS ATES Componenti Elettronicie S.P.A. Linear alternating-current amplifier. 4,266,199, Cl. 330-274.000.

Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., to Imperial Chemical Industries Limited. Comminution process. 4,265,406, Cl. 241-16.000.

Pallos, Ferenc M., to Stauffer Chemical Company. N-Acylsulfonamide herbicidal antidotes. 4,266,078, Cl. 564-91.000.

Palmer, Fred I., to Masonite Corporation. Foamed plastic core door. 4,265,067, Cl. 52-309.900.

Palmer, Nigel I.: *See*—
O'Rell, Dennis D.; Palmer, Nigel I.; and Nguyen, Vu H., 4,265,985, Cl. 429-225.000.

Panepinto, William, Jr., to Honeywell Information Systems, Inc. Row selection circuits for memory circuits. 4,266,285, Cl. 365-189.000.

Papadofrangakis, Emmanuel; Engeler, William E.; and Fakiris, John A., to General Electric Company. Measurement of true blood velocity by an ultrasound system. 4,265,126, Cl. 73-861.250.

Papenfuhs, Theodor; and Teige, Wolfgang, to Hoechst Aktiengesellschaft. Process for the coloration of thermoplastic polymers and polycondensates in the mass with water-insoluble disazomethine compounds. 4,265,632, Cl. 8-512.000.

Papp, Istvan: *See*—
Heller, Laszlo; Forgo, Laszlo; Papp, Istvan; Bodas, Janos; Kovacs, Gyula; and Laszlo, Karoly, 4,265,275, Cl. 138-38.000.

Papuchon, Michel: *See*—
Leclerc, Pierre; Puech, Claude; Papuchon, Michel; and Lallemand, Pierre, 4,265,541, Cl. 356-350.000.

Pardue, Ray L.; and Buehl, Arnold L., to Econoray, Inc. Self-ventilating infra-red ray heater. 4,266,117, Cl. 219-343.000.

Parezo, Allen. Basement waterproofing system. 4,265,064, Cl. 52-169.500.

Park-Ohio Industries, Inc.: *See*—
Ciolkevich, John T., 4,266,109, Cl. 219-10.570.

Park, Ronald S., to Henderson's Industries Limited. Polyether-based polyurethane foams including a flame-retardant system containing antimony trioxide, a chlorinated paraffin and alumina trihydrate and method of preparation. 4,266,042, Cl. 521-123.000.

Parker, Dawood, to Battle Research and Development Associates. Electrode. 4,265,250, Cl. 128-635.000.

Parker, John A.; Handler, Sid; and Snook, Randolph W., to Pullman Incorporated. Corrosion resistant membrane for chimney liner. 4,265,166, Cl. 98-58.000.

Passavant-Werke Michelbacher Huette: *See*—
Busse, Oswald; and Klesper, Hugo, 4,265,171, Cl. 100-118.000.
Busse, Oswald; and Klesper, Hugo, 4,265,749, Cl. 210-138.000.

Patel, Pradeep V., to B. F. Goodrich Company, The. Process for removing α-acetylenes from diolefins. 4,266,086, Cl. 585-810.000.

Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., to Exxon Research and Engineering Company. Method for producing microbial cells and use thereof to produce oxidation products. 4,266,034, Cl. 435-253.000.

Paul, Jill H., to Mobil Oil Corporation. Insecticidal hydroxylamine ethers. 4,265,907, Cl. 424-304.000.

Paulsson, Bengt G.: *See*—
Nylen, Ulf T. G.; Olsson, Lars-Goran; Paulsson, Bengt G.; Qvarnstrom, Lars A. G.; and Wichers, Rolf H. L., 4,266,021, Cl. 435-14.000.

Pavlik, Norman M.: *See*—
Krause, Robert F.; Pavlik, Norman M.; and Grunert, Kurt A., 4,265,681, Cl. 148-111.000.

Pawson, Beverly A.: *See*—
Chan, Ka-Kong; and Pawson, Beverly A., 4,266,073, Cl. 560-55.000.

Paxson, Timm E.: *See*—
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., 4,266,085, Cl. 585-645.000.

Payne, Harris F.; and Evans, Michael G., to A.R.A. Manufacturing Co. Blower systems circuit interrupting apparatus and method. 4,265,597, Cl. 417-32.000.

Payton, Clarence M.: *See*—
Freeman, Danny M.; Knight, Milton M., Jr.; Payton, Clarence M.; Simpson, Robert S.; and Smith, Howard B., Jr., 4,264,993, Cl. 8-149.000.

Pease, Floyd T.: *See*—
Herrmann, Robert P.; Pease, Floyd T.; and Ray, Donald R., 4,265,568, Cl. 405-196.000.

Peeples, Denny L., to General Motors Corporation. Hydraulic motor seal and valve arrangement. 4,265,087, Cl. 60-550.000.

Pegel, Karl H., to Roecar Holdings (Netherlands Antilles (NV). Spiroketalins and their applications. 4,265,886, Cl. 424-182.000.

Peisner, Israel D.; and Stol, George H., to Whitehead & Kales Company. Upper closure for an end door of a rail car. 4,265,183, Cl. 105-410.000.

Peleckis, Anthony J., Jr.: *See*—
Cartwright, Cyril A.; and Peleckis, Anthony J., Jr., 4,265,055, Cl. 51-80.00B.

Pelser, Lewis M.: *See*—
Pelser, Robert J.; Pelser, Lewis M.; Hill, Robert W.; Brown, Sanford W.; and Fischer, Robert G., 4,265,680, Cl. 148-103.000.
Pelser, Robert J.; Pelser, Lewis M.; Hill, Robert W.; Brown, Sanford W.; and Fischer, Robert G., to Astrolab Corp. Method for making hollow magnetic pipe. 4,265,680, Cl. 148-103.000.

Penneck, Richard J.: *See*—
Moody, Anthony G.; and Penneck, Richard J., 4,265,801, Cl. 260-40.00R.

Perfection Manufacturing Company, The: *See*—
Hoffmann, Ralph L., 4,265,079, Cl. 56-202.000.

Perkins, Norman P., Jr., to Gould Inc. Biasing means for combination actuator. 4,266,105, Cl. 200-50.00A.

Perlegos, George; and Johnson, William S., to Intel Corporation. Electrically alterable read-mostly memory. 4,266,283, Cl. 365-104.000.

Perrotti, Emmanuel J., to International Telephone and Telegraph Corporation. Circularly polarized crossed slot waveguide antenna array. 4,266,228, Cl. 343-771.000.

Perruso, Robert S. Combination vehicle for towing, dumping and the like. 4,265,463, Cl. 280-402.000.

Perry, John C. Trimming device to control propeller forces affecting propeller driven boats. 4,265,626, Cl. 440-66.000.

Peter, Heinrich: *See*—
Kocsis, Karoly; Peter, Heinrich; and Bickel, Hans, 4,265,892, Cl. 424-246.000.

Peters, John W.; and Gebhart, Frank L., to Hughes Aircraft Company. Mobile transparent window apparatus and method for photochemical vapor deposition. 4,265,932, Cl. 427-53.100.

Peters, Joseph, Jr. Electronically operable game scoring apparatus. 4,266,214, Cl. 340-323.00R.

Peters, Loren W., to Deere & Company. Blower system for an axial flow rotary combine cleaning shoe. 4,265,077, Cl. 56-14.600.
Peters, R. Donald, to United States of America, Army. Piezoelectric resonator assembly with thin molybdenum mounting clips. 4,266,157, Cl. 310-353.000.
Petersen, Christian C., to Polaroid Corporation. Shutter blade drive system. 4,265,530, Cl. 354-235.000.
Petersen, Kurt-Eckard: *See*—
Koch, Franz-Peter; Pinck, Peter; Petersen, Kurt-Eckard; Lange, Norbert; Kohler, Elke; and Bornfleth, Ulrich, 4,265,254, Cl. 131-281.000.
Peterson, Wayne A., to Caterpillar Tractor Co. High pressure implement circuit for loader with slow and fast dump position. 4,265,273, Cl. 137-625.680.
Petrolite Corporation: *See*—
Gilicinski, George A.; and Lawrence, Rodney G., 4,265,663, Cl. 106-10.000.
Pett, Robert A.; Rao, V. Durga N.; and Qaderi, S. Burhan A., to Ford Motor Company. Moldable mixture of sacrificial binder and sinterable particulate solids. 4,265,794, Cl. 260-28.50R.
Pfeiffer, Robert C.: *See*—
Harrell, Terry R.; and Pfeiffer, Robert C., 4,265,415, Cl. 242-107.40A.
Pfister, Hans B.: *See*—
Baltensperger, Rudolf; and Pfister, Hans B., 4,264,996, Cl. 14-21.000.
Pfizer Inc.: *See*—
Hoyt, Hazen L., 4th; and Uhr, Daniel R., Jr., 4,265,653, Cl. 71-11.000.
Pfleiderer, Hans-Jorg: *See*—
Herbst, Heiner; Pfleiderer, Hans-Jorg; Koch, Rudolf; and Tihanyi, Jeno, 4,266,235, Cl. 357-30.000.
Philips, J. Christopher, administrator: *See*—
Horwitz, Jerome P.; Neenan, John P.; Misra, Radhey S.; Rozhin, Jurij; Huo, Anne; and Philips, Kerstin D., deceased, 4,266,048, Cl. 536-27.000.
Philips, Kerstin D., deceased: *See*—
Horwitz, Jerome P.; Neenan, John P.; Misra, Radhey S.; Rozhin, Jurij; Huo, Anne; and Philips, Kerstin D., deceased, 4,266,048, Cl. 536-27.000.
Phillips Petroleum Company: *See*—
Borenstein, David E., 4,265,849, Cl. 264-168.000.
Hedges, James H.; and Glinsmann, Gilbert R., 4,265,308, Cl. 166-252.000.
Hobbs, James W., 4,265,263, Cl. 137-2.000.
Mills, King L.; and Johnson, Paul H., 4,265,870, Cl. 423-450.000.
Mitchell, Norris W., 4,265,731, Cl. 208-80.000.
Romanek, Gerald A., 4,265,954, Cl. 428-85.000.
Tabler, Donald C.; and Gray, Bobby G., 4,265,733, Cl. 208-179.000.
Wu, Yulin, 4,266,046, Cl. 528-309.000.
Photon Power, Inc.: *See*—
Jordan, John P.; and Lampkin, Curtis, 4,265,933, Cl. 427-54.100.
Picchi, Mario: *See*—
Moro, Gianni; and Picchi, Mario, 4,265,620, Cl. 433-69.000.
Pielemeier, John W.: *See*—
Kretchman, Gerald L.; Mulder, James R.; and Pielemeier, John W., 4,265,100, Cl. 68-12.00R.
Pierson, Paul B.: *See*—
Compton, Bertram L.; and Pierson, Paul B., 4,265,524, Cl. 354-65.000.
Pilatovsky, Viktor P.: *See*—
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Pillsbury Company, The: *See*—
Anderson, George R.; Ott, Walter R.; Smoke, Edward J.; Easter, Ross A.; and Sholl, Jeffrey J., 4,266,108, Cl. 219-10.55E.
Pinck, Peter: *See*—
Koch, Franz-Peter; Pinck, Peter; Petersen, Kurt-Eckard; Lange, Norbert; Kohler, Elke; and Bornfleth, Ulrich, 4,265,254, Cl. 131-281.000.
Pinson, George T.: *See*—
McTigue, Larry D.; and Pinson, George T., 4,266,173, Cl. 318-585.000.
Piterskikh, Georgy P.; Sukhov, Stanislav A.; Slobodchikov, Vladimir B.; Sutyagin, Ivan S.; and Terentiev, Albert M. Apparatus for spray drying of liquid and paste-like materials. 4,265,617, Cl. 432-58.000.
Pitney Bowes Inc.: *See*—
Dannatt, Hugh St. L., 4,266,115, Cl. 219-216.000.
Eckert, Alton B.; and Duwel, Edward C., 4,266,222, Cl. 340-679.000.
Pitroda, Satyan G.: *See*—
Regan, John F.; Pitroda, Satyan G.; and Min, Byung C., 4,266,292, Cl. 370-13.000.
Pitt, Gillies D., to ITT Industries, Inc. Oil-in-water method and detector. 4,265,535, Cl. 356-70.000.
Pizzuto, Russell: *See*—
Wagster, Robert P.; and Pizzuto, Russell, 4,265,436, Cl. 269-274.000.
Plessey Handel und Investments AG: *See*—
Jeffrey, Cyril, 4,265,689, Cl. 156-73.200.
Plockinger, Erwin; Kuhnelt, Gert; Machner, Peter; and Jager, Heimo, to Vereinigte Edelstahlwerke Aktiengesellschaft (VEW). Method of producing steel ingots. 4,265,295, Cl. 164-52.000.
Poe, L. Richard, to Hartwell Corporation. Flush type rotary drive for latches. 4,265,474, Cl. 292-241.000.
Pohl, Christopher A., to Dionex Corporation. Chromatographic separation and quantitative analysis of ionic species. 4,265,634, Cl. 23-230.00R.
Pohlmann, Hans-Jurgen: *See*—
Forster, Siegfried; Kleemann, Manfred; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans-Jurgen, 4,265,302, Cl. 165-165.000.
Polaroid Corporation: *See*—
Idelson, Elbert M., 4,265,811, Cl. 260-147.000.
Petersen, Christian C., 4,265,530, Cl. 354-235.000.
Stella, Joseph A.; and Wright, Joseph H., 4,265,525, Cl. 354-76.000.
Polcer, Anton J.: *See*—
Steensma, Peter D.; Haussmann, Robert H.; and Polcer, Anton J., 4,266,183, Cl. 324-52.000.
Poletto, John F.: *See*—
Bernstein, Seymour; and Poletto, John F., 4,265,829, Cl. 260-510.000.
Polli, Claudio, to Neco AG. Time verification apparatus. 4,266,230, Cl. 346-22.000.
Pollinger, Hans, to Knorr-Bremse GmbH. Braking apparatus for vehicles. 4,265,492, Cl. 303-14.000.
Pols, Sidney R. Shoe to be worn over cast. 4,265,033, Cl. 36-110.000.
Polymer Cencentrates, Inc.: *See*—
Christopherson, Phillips; and Aelion, Rene, 4,265,789, Cl. 252-511.000.
Polysar Limited: *See*—
Tebbens, Klaas; Fischer, Erhardt; and Lo, Jhy-Dou R., 4,265,939, Cl. 427-222.000.
Pomerantzeff, Oleg, to Retina Foundation. Wide-angle ophthalmoscope. 4,265,519, Cl. 351-16.000.
Pommier, Jean, to Compagnie Generale des Etablissements Michelin. Tire with asymmetric reinforcement employing carcass expansion correction block. 4,265,289, Cl. 152-209.00A.
Pommier, Jean, to Compagnie Generale des Etablissements Michelin. Radial carcass tire employing carcass expansion limiting block. 4,265,291, Cl. 152-352.00R.
Pomroy, Michael F., to Combustion Engineering, Inc. Security panel door. 4,265,068, Cl. 52-456.000.
Portec, Inc.: *See*—
Burford, Billy R., 4,265,150, Cl. 82-17.000.
Portner, Peer M.; and Jassawalla, Jal S., to Andros Incorporated. Implantable infusion device. 4,265,241, Cl. 128-260.000.
Potomac Applied Mechanics, Inc.: *See*—
Stubbings, James H., 4,265,156, Cl. 83-530.000.
Potters, Cornelis J. T.: *See*—
Nicia, Antonius J. A.; and Potters, Cornelis J. T., 4,265,511, Cl. 350-96.180.
Powlenko, Edward J.: *See*—
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PPG Industries, Inc.: *See*—
Reese, Thomas J.; and Thomas, Dean L., 4,265,650, Cl. 65-104.000.
Pratt, Charles E., to Chattem Inc. Polyester resin composition containing oxy aluminum acylates. 4,265,975, Cl. 428-480.000.
Presnall, Lance O.; and Thurner, Gary H., to FMC Corporation. Heat extracting muffler system. 4,265,332, Cl. 181-211.000.
Presta, John C.: *See*—
Yates, Derek N.; and Presta, John C., 4,265,951, Cl. 428-36.000.
Prewo, Karl M., to United Technologies Corporation. High strength, high thermally conductive articles. 4,265,968, Cl. 428-336.000.
Pricca, Angelo: *See*—
Giannini, Umberto; Longi, Paolo; Deluca, Domenico; and Pricca, Angelo, 4,265,785, Cl. 252-429.00B.
Price, Lawrence D., Jr., to Minnesota Mining and Manufacturing Company. Copy machine with automatic roll supplied copy paper feeding and cutting apparatus and control circuitry. 4,265,153, Cl. 83-372.000.
Price, Robert S.: *See*—
Fischer, Charles M., Jr.; and Price, Robert S., 4,265,239, Cl. 128-205.170.
Prilutsky, Anatoly N.: *See*—
Goncharov, Evgeny S.; Prilutsky, Anatoly N.; and Shevchuk, Viktor I., 4,265,738, Cl. 209-31.000.
Procter & Gamble Company, The: *See*—
Boyer, Stanton L.; and Nicholson, Denzel A., 4,265,777, Cl. 252-113.000.
Gandolfo, Daniel; and Cooper, David J., 4,265,779, Cl. 252-135.000.
Jones, Kenneth L., 4,265,772, Cl. 252-8.600.
Prohaska, Theodore, Jr. Vehicle refinishing process. 4,265,936, Cl. 427-140.000.
Proud, Joseph M.; and Smith, Robert K., to GTE Laboratories Incorporated. Compact fluorescent light source having metallized electrodes. 4,266,166, Cl. 315-248.000.
Proud, Joseph M.; and Baird, Donald H., to GTE Laboratories Incorporated. Compact fluorescent light source and method of excitation thereof. 4,266,167, Cl. 315-248.000.
Prowting, Christopher T.: *See*—
Barclay, Donald J.; and Prowting, Christopher T., 4,265,543, Cl. 356-369.000.

Prudhon, Francois; and Scicluna, Augustin, to Rhone-Poulenc Industries. Method and apparatus for the treatment of heat-sensitive materials. 4,265,702, Cl. 159-48.00R.
Puech, Claude: *See—*
Leclerc, Pierre; Puech, Claude; Papuchon, Michel; and Lallemand, Pierre, 4,265,541, Cl. 356-350.000.
Puhakka, Marie M.: *See—*
Koskenniska, Lasse A.; and Puhakka, Marie M., 4,265,824, Cl. 260-397.250.
Pullman Incorporated: *See—*
Parker, John A.; Handler, Sid; and Snook, Randolph W., 4,265,166, Cl. 98-58.000.
Purdue Research Foundation: *See—*
Krutz, Gary W., 4,265,076, Cl. 56-14.400.
Tsao, George T.; Dale, Bruce E.; and Ladisch, Michael R., 4,265,675, Cl. 127-37.000.
Pyykkonen, Markku, to Valmet Oy. Apparatus for cleaning doctor blades in paper machines. 4,265,705, Cl. 162-272.000.
Qaderi, S. Burhan A.: *See—*
Pett, Robert A.; Rao, V. Durga N.; and Qaderi, S. Burhan A., 4,265,794, Cl. 260-28.50R.
Quetier, Monique: *See—*
Contre, Michel; Martin, Philippe; and Quetier, Monique, 4,265,666, Cl. 106-43.000.
Quigley, Thomas B.: *See—*
Scheller, Arnold D., Jr.; and Quigley, Thomas B., 4,265,231, Cl. 128-92.00E.
Quinn, Paul A., Jr.: *See—*
Krieg, Michael L.; and Quinn, Paul A., Jr., 4,265,556, Cl. 400-342.000.
Qvarnstrom, Lars A. G.: *See—*
Nylen, Ulf T. G.; Olsson, Lars-Goran; Paulsson, Bengt G.; Qvarnstrom, Lars A. G.; and Wichers, Rolf H. L., 4,266,021, Cl. 435-14.000.
Raftery, William B.; Whitwam, Ronald L.; and Wisniewski, Joseph M., to Steelcase Inc. Modular seating arrangement. 4,265,483, Cl. 297-440.000.
Rahn, Armin: *See—*
Hallbauer, Hans-Dieter; Gast, Fritz G. H.; Hoenow, Klaus-Werner; and Rahn, Armin, 4,265,109, Cl. 73-862.230.
Rakovsky, Naftula L.: *See—*
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Ralson Purina Company: *See—*
Skoch, Leroy V.; Harmon, Bud G.; Dickerson, Charles W.; and Chou, Nelson S., 4,265,916, Cl. 426-74.000.
Ram Products, Inc.: *See—*
Romanelli, Pat; Romanelli, Robert J.; and Shutt, Richard W., 4,265,612, Cl. 431-66.000.
Rank Organisation Limited, The: *See—*
Waldron, Christopher J.; and Matchell, Raymond, 4,266,246, Cl. 358-216.000.
Rannenberg, George C., to United Technologies Corporation. Combined fresh air regenerator and air cycle heat pump. 4,265,397, Cl. 237-2.00B.
Rao, V. Durga N.: *See—*
Pett, Robert A.; Rao, V. Durga N.; and Qaderi, S. Burhan A., 4,265,794, Cl. 260-28.50R.
Rapoport, George. Attache case with removable file folder. 4,265,286, Cl. 150-1.600.
Rasche, John F.: *See—*
Campbell, Michael F.; Fiala, Richard J.; Wideman, James D.; and Rasche, John F., 4,265,925, Cl. 426-641.000.
Rasmussen, C. Royce; and Jacoby, Henry I., to McNeilab, Inc. N-Aryl-N'-imidazol-2-ylureas. 4,265,900, Cl. 424-273.00R.
Rasmussen, Chris R., to McNeilab, Inc. (1-Methyl-2-pyridinylidene) derivatives of guanidine. 4,266,062, Cl. 546-281.000.
Rasmussen, Glen: *See—*
Tsuchiya, Takuzo; Fang, Jin-Liou; and Rasmussen, Glen, 4,265,922, Cl. 426-520.000.
Rasmussen, Henry. Heater. 4,265,214, Cl. 126-77.000.
Rasor Associates, Inc.: *See—*
Tickner, Ernest G., 4,265,251, Cl. 128-660.000.
Rathmell, William G.: *See—*
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,266,056, Cl. 544-311.000.
Rausch, Werner: *See—*
Muller, Gerhard; and Rausch, Werner, 4,265,677, Cl. 148-6.15Z.
Ray, Donald R.: *See—*
Herrmann, Robert P.; Pease, Floyd T.; and Ray, Donald R., 4,265,568, Cl. 405-196.000.
Raychem Corporation: *See—*
Marshall, Larry J.; and Jensen, Phillip C., 4,265,216, Cl. 126-263.000.
Raychem Limited: *See—*
Moody, Anthony G.; and Penneck, Richard J., 4,265,801, Cl. 260-40.00R.
Raymond Corporation, The: *See—*
Adams, Walter P., 4,266,215, Cl. 340-347.00P.
RCA Corporation: *See—*
Balaban, Alvin R.; and Steckler, Steven A., 4,266,245, Cl. 358-153.000.
Breithaupt, David W., 4,266,197, Cl. 328-55.000.
Compton, Bertram L.; and Pierson, Paul B., 4,265,524, Cl. 354-65.000.
Ladany, Ivan, 4,265,699, Cl. 156-657.000.
Siekanowicz, Wieslaw W., 4,266,159, Cl. 313-422.000.
Realty and Industrial Corporation: *See—*
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,265,558, Cl. 400-672.200.
Reba, Imants, to Crown Zellerbach Corporation. Particulate matter dispersing and transporting system. 4,265,573, Cl. 406-152.000.
Reed, Robert D.; and Bengston, Merle A., to John Zink Company. Control system for purge gas to flare. 4,265,611, Cl. 431-3.000.
Reese, Thomas J.; and Thomas, Dean L., to PPG Industries, Inc. Method of bending glass sheets in unison to complicated shapes. 4,265,650, Cl. 65-104.000.
Regan, John F.; Pitroda, Satyan G.; and Min, Byung C., to Wescom Switching, Inc. Method and apparatus for testing analog-to-digital and digital-to-analog code converters. 4,266,292, Cl. 370-13.000.
Regan, Robert J.: *See—*
McNeill, William H.; Feuersanger, Alfred E.; Haugsjaa, Paul O.; and Regan, Robert J., 4,266,162, Cl. 315-39.000.
Reggiani, Tito: *See—*
Carosi, Franco; and Reggiani, Tito, 4,266,284, Cl. 365-189.000.
Reid, Philip L.: *See—*
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,265,074, Cl. 53-551.000.
Reid, Thomas: *See—*
McMaster, Tom; and Reid, Thomas, 4,265,106, Cl. 72-389.000.
Reilly, David H. Portable liquid metering device. 4,265,370, Cl. 222-25.000.
Reinehr, Ulrich; von Falkai, Bela; and Wilschinsky, Horst, to Bayer Aktiengesellschaft. Hydrophilic filaments and fibres of polycarbonates with a high second order transition temperature. 4,265,971, Cl. 428-376.000.
Reiner, Lawrence L.; Marra, Michael; and Hennig, Michael F., to Louis Marx & Co., Inc. Simulated bowling game. 4,265,449, Cl. 273-41.000.
Reist, Walter; and Glatz, Werner, to Ferag AG. Method and apparatus for folding multi-sheet paper products, especially for the further longitudinal folding of newspapers having a transverse break. 4,265,437, Cl. 493-435.000.
Remijan, Paul W. Optical apparatus and method for producing the same. 4,265,534, Cl. 356-2.000.
Renschke, Joachim, to ITT Industries, Inc. Circuit arrangement for an input keyboard. 4,266,213, Cl. 340-166.00R.
Research Corporation: *See—*
Lenz, Robert W.; and Vert, Michel, 4,265,247, Cl. 128-335.500.
Retina Foundation: *See—*
Pomerantzeff, Oleg, 4,265,519, Cl. 351-16.000.
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., to Sigma Systems, Inc. Web processing mechanism for forming packages. 4,265,074, Cl. 53-551.000.
Reynolds, Wyndall O.: *See—*
Elswood, Ebbert L.; and Reynolds, Wyndall O., 4,266,287, Cl. 367-185.000.
Rhone-Poulenc Industries: *See—*
Fabre, Albert, 4,265,917, Cl. 426-104.000.
Gruffaz, Max; and Micaelli, Odile, 4,266,076, Cl. 560-247.000.
Prudhon, Francois; and Scicluna, Augustin, 4,265,702, Cl. 159-48.00R.
Ribka, Joachim; Tappe, Horst; Roth, Kurt; and Weyer, Hans-Jurgen, to Cassella Aktiengesellschaft. Process for the production of resist effects of polyester/cellulose mixed fibre textiles. 4,265,629, Cl. 8-449.000.
Rice, Harold E.; and Neel, N. Ray. Oral hygiene apparatus for showers. 4,265,229, Cl. 128-66.000.
Richard, Andre, to Compagnie Internationale Pour l'Informatique CII-Honeywell Bull. Arrangement for extraction and receiving data for a refreshable memory. 4,266,286, Cl. 365-205.000.
Richard Wolf GmbH: *See—*
Heckele, Helmut, 4,265,561, Cl. 403-3.000.
Ricks, Walter G.: *See—*
Hurley, Byron H.; and Ricks, Walter G., 4,265,695, Cl. 156-285.000.
Ricoh Company, Ltd.: *See—*
Hara, Kazuyuki; and Kamada, Takeshi, 4,266,251, Cl. 358-286.000.
Hirakura, Koji; Sawada, Yasuo; and Watase, Kenta, 4,266,141, Cl. 250-564.000.
Rieb, Gerhard: *See—*
Wortmann, Joachim; Rieb, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, 4,265,854, Cl. 422-40.000.
Riegler, Ernst; and Schmidt, Manfred, to Voest-Alpine Aktiengesellschaft. Torque support arrangement. 4,265,136, Cl. 74-380.000.
Riess, Gerhard: *See—*
Munster, Gerhard; Riess, Gerhard; and Russow, Jurgen, 4,265,865, Cl. 423-300.000.
Riley, Edward J.: *See—*
Frost, Stuart J.; Riley, Edward J.; and Bogdan, Ronald F., 4,265,023, Cl. 33-174.00C.
Riley, Edwin J.: *See—*
Starling, Lynn B.; Stephan, James E.; and Stroud, Robert D., 4,265,669, Cl. 106-73.400.
Ritchie, Robert T.: *See—*
Drago, Gary A.; Mix, Arthur L., Jr.; and Ritchie, Robert T., 4,266,231, Cl. 346-75.000.

Rittmiller, Lawrence A.: *See—*
Aakalu, Nandakumar G.; and Rittmiller, Lawrence A., 4,265,775, Cl. 252-573.000.
Rivalle, Christian: *See—*
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,266,060, Cl. 546-64.000.
Robert Bosch GmbH: *See—*
Dreher, Ernst; Stroezel, Reinhold; Spittler, Siegfried; and Wolf, Richard, 4,265,604, Cl. 418-43.000.
Haecker, Wolf-Dieter; Friese, Karl-Hermann; and Topp, Bernhard, 4,265,724, Cl. 204-195.00S.
Jundt, Werner; and Roozenbeek, Herman, 4,265,204, Cl. 123-418.000.
Kofink, Wolfgang, 4,265,496, Cl. 308-122.000.
Kolb, Erich; and Laurent, Heinrich, 4,264,997, Cl. 15-250.290.
Streit, Klaus; Harsch, Klaus; and Schulzke, Peter, 4,266,261, Cl. 361-154.000.
Wessel, Wolf; and Engel, Gerhard, 4,265,200, Cl. 123-501.000.
Roberts, Michael G.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,265,563, Cl. 404-75.000.
Robertson, James R. Linear-rotary translator. 4,265,132, Cl. 74-104.000.
Robinson, Martin A.: *See—*
Felice, Charles J., Jr.; Evans, Francis E.; Robinson, Martin A.; and Eibeck, Richard E., 4,265,871, Cl. 423-531.000.
Rock, Harry: *See—*
Kueper, Theodore V.; Schack, Warren R.; and Rock, Harry, 4,265,918, Cl. 426-264.000.
Rockwell International Corporation: *See—*
Lim, Teong C.; and Staples, Edward J., 4,265,124, Cl. 73-703.000.
Morris, Winfred L.; Inman, Richard V.; and Buck, Otto, 4,265,120, Cl. 73-600.000.
Rockwell-Rimoldi, S.p.A.: *See—*
Torre, Giancarlo D., 4,265,187, Cl. 112-121.260.
Rodney Hunt Company: *See—*
Watelet, Robert P., 4,265,564, Cl. 405-105.000.
Roecar Holdings (Netherlands Antilles (NV): *See—*
Pegel, Karl H., 4,265,886, Cl. 424-182.000.
Rogers Corporation: *See—*
Fukuda, Sunichi, 4,266,091, Cl. 174-72.00B.
Rohlfs, Hans-Adolf: *See—*
Gohla, Werner; Hestermann, Klaus; Kandler, Joachim; Wasel-Nielen, Horst-Dieter; Sommer, Klaus; Rohlfs, Hans-Adolf; and Merkenich, Karl, 4,265,776, Cl. 252-98.000.
Rohm and Haas Company: *See—*
Beasley, Glenn H.; Chong, Berni P.; Ford, Warren T.; and Neely, James W., 4,265,768, Cl. 210-682.000.
Breslau, Barry R., 4,266,026, Cl. 435-99.000.
Chancler, Francis X., 4,265,965, Cl. 428-315.000.
Lewis, Sheldon N.; Miller, George A.; and Law, Andrew B., 4,265,899, Cl. 424-270.000.
Rolfe, Norman F.: *See—*
Carson, William W.; and Rolfe, Norman F., 4,265,536, Cl. 356-130.000.
Rolls-Royce Limited: *See—*
Davies, David O., 4,265,590, Cl. 415-110.000.
Romagnolo, Gerard: *See—*
Delattre, Marcel; and Romagnolo, Gerard, 4,265,007, Cl. 29-79.000.
Roman, Vincent G.: *See—*
Kayalioglu, Inanc; Roman, Vincent G.; and Lewandowski, Ted J., 4,266,099, Cl. 179-16.0EA.
Romanek, Gerald A., to Phillips Petroleum Company. Selective-area fusion of non-woven fabrics. 4,265,954, Cl. 428-85.000.
Romanelli, Pat; Romanelli, Robert J.; and Shutt, Richard W., to Ram Products, Inc. Intermittent pulsing gas ignition system. 4,265,612, Cl. 431-66.000.
Romanelli, Robert J.: *See—*
Romanelli, Pat; Romanelli, Robert J.; and Shutt, Richard W., 4,265,612, Cl. 431-66.000.
Romey, Ingo: *See—*
Lennartz, Rudiger; and Romey, Ingo, 4,265,771, Cl. 210-769.000.
Roozenbeek, Herman: *See—*
Jundt, Werner; and Roozenbeek, Herman, 4,265,204, Cl. 123-418.000.
Rosaen, Borje O.; and Fosdick, Dale P. Relief valve. 4,265,271, Cl. 137-540.000.
Rosaen, Borje O.; and Fosdick, Dale P. Fluid filtering device. 4,265,761, Cl. 210-315.000.
Rosegren, Donald R.; Johnson (Bulsiewicz), Noreen C.; and Stevens, Peter, to Oxy Metal Industries Corporation. Silver electrodeposition process. 4,265,715, Cl. 204-46.00R.
Rosemeier, Friedrich; and Killmaier, Horst, to Gambro Dialysatoren GmbH & Co. KG. Connection device for providing selective fluid communication between first and second conduits. 4,265,428, Cl. 251-346.000.
Rosemount Inc.: *See—*
De Leo, Richard V.; and Hagen, Floyd W., 4,265,112, Cl. 73-180.000.
Rosenthal Technik AG: *See—*
Forster, Siegfried; Kleemann, Manfred; Krauth, Axel; Maier, Horst R.; and Pohlmann, Hans-Jurgen, 4,265,302, Cl. 165-165.000.
Rossi, Pier P.; Tempesti, Aldo; and Filippi, Aldo, to SNIA Viscosa Societa' Nazionale Industria. Process for the manufacture of fire resistant acrylic polymer yarns and films. 4,265,628, Cl. 8-115.500.
Roth Freres S.A.: *See—*
Roth, Jacques, 4,265,851, Cl. 264-321.000.
Roth, Jacques, to Roth Freres S.A. Process for moulding cellular polycarbodiimide. 4,265,851, Cl. 264-321.000.
Roth, Kurt: *See—*
Ribka, Joachim; Tappe, Horst; Roth, Kurt; and Weyer, Hans-Jurgen, 4,265,629, Cl. 8-449.000.
Roussel Uclaf: *See—*
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,265,817, Cl. 260-343.30R.
Rovnyak, George C., to E. R. Squibb & Sons, Inc. Mercaptoacyldihydropyrazole carboxylic acid derivatives. 4,266,065, Cl. 548-379.000.
Rowa, Jan-Erik; and Sundgren, Anders. Device for resiliently supporting a driver's compartment, particularly in heavy-duty trucks. 4,265,328, Cl. 180-89.130.
Rowell, Robert; and Hickey, Albert A. Portable fence stile. 4,265,333, Cl. 182-92.000.
Rowlands, Kenneth C. Extractor arrangement for firearms. 4,265,043, Cl. 42-25.000.
Rozhin, Jurij: *See—*
Horwitz, Jerome P.; Neenan, John P.; Misra, Radhey S.; Rozhin, Jurij; Huo, Anne; and Philips, Kerstin D., deceased, 4,266,048, Cl. 536-27.000.
Ruckert, Hans: *See—*
Buhr, Gerhard; and Ruckert, Hans, 4,266,001, Cl. 430-192.000.
Rudich, George, Jr., to Johnson Controls, Inc. Motor over-heating protection circuit. 4,266,257, Cl. 361-27.000.
Rudner, Bernard. Coated fibers and related process. 4,265,972, Cl. 428-392.000.
Ruegg, Eugen H., to General Electric Company. Mounting arrangement for transistors and the like. 4,266,267, Cl. 361-386.000.
Ruge, Walter, to Hospital and Welfare Board of Hillsborough County, The. Infant extremity positioner and illuminator. 4,265,227, Cl. 128-23.000.
Ruhle, Martin, to Mahle GmbH. Method of testing silicon content in aluminium alloys. 4,266,186, Cl. 324-65.00R.
Runckel, John L. Goggles. 4,264,987, Cl. 2-428.000.
Runge, J. Marvin. Keyboard apparatus. 4,265,557, Cl. 400-479.000.
Ruoff, Arthur L.: *See—*
Nelson, David A., Jr.; and Ruoff, Arthur L., 4,266,138, Cl. 250-492.00A.
Rusch, Heinz, to Willy Rusch GmbH & Co. KG. Method for the production of a medical instrument. 4,265,848, Cl. 264-130.000.
Russo, Baldassare. Means and technique for interconnecting the ends of spaced coaxial conduits with an expansion joint having a reduced axial dimension. 4,265,473, Cl. 285-229.000.
Russow, Jurgen: *See—*
Munster, Gerhard; Riess, Gerhard; and Russow, Jurgen, 4,265,865, Cl. 423-300.000.
Rust Engineering Company, The: *See—*
Huang, Max W., 4,266,083, Cl. 585-240.000.
Ruzin, Leonid M.: *See—*
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Ryuichi, Tanaka, to Nippon Air Brake Co., Ltd. Brake fluid pressure control valve responsive to deceleration. 4,265,493, Cl. 303-24.00C.
Saahiro, Yasuo: *See—*
Hachisuka, Shunji; Kurashige, Shinji; and Saahiro, Yasuo, 4,265,678, Cl. 148-12.00B.
Sabacky, Milton J., to Monsanto Company. Catalytic asymmetric hydrogenation. 4,265,827, Cl. 260-440.000.
Sagami Chemical Research Center: *See—*
Fujisawa, Tamotsu; Kondo, Kiyoshi; and Sakai, Kunikazu, 4,266,067, Cl. 549-79.000.
Saint-Gobain Industries: *See—*
Achener, Claude, 4,265,649, Cl. 65-18.000.
Saipem, S.p.A.: *See—*
Scodino, Ambrogio, 4,265,566, Cl. 405-172.000.
Saischek, Gerald; Wegleitner, Karlheinz; Heu, Ferdinand; and Wohlmuth, Roman, to Chemie Linz Aktiengesellschaft. Spirocyclic boron compounds, a process for their manufacture and their use as a flame-retardant additive. 4,265,664, Cl. 106-18.130.
Saito, Hiroki, to Fuji Photo Film Co., Ltd. Differential pressure coating system. 4,265,941, Cl. 427-296.000.
Saito, Mitsuru: *See—*
Ueda, Hiroshi; and Saito, Mitsuru, 4,265,526, Cl. 354-106.000.
Saito, Yoichi: *See—*
Imanaka, Yoshihiko; Nakamatsu, Hiroshi; Horike, Akihiro; Saito, Yoichi; and Iwata, Kaoru, 4,266,053, Cl. 544-196.000.
Sakai, Kunikazu: *See—*
Fujisawa, Tamotsu; Kondo, Kiyoshi; and Sakai, Kunikazu, 4,266,067, Cl. 549-79.000.
Sakai, Nobuo; Nakamura, Kotaro; Morigaki, Masakazu; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,266,020, Cl. 430-551.000.
Sakai, Takeo: *See—*
Ikeda, Tadashi; Sakai, Takeo; Takei, Haruo; and Inoue, Noriyuki, 4,266,003, Cl. 430-264.000.
Ishiguro, Shoji; Shishido, Tadao; Sakai, Takeo; Sasaki, Noboru; Nagaoka, Joji; and Matsuki, Minoru, 4,266,018, Cl. 430-550.000.

Sakai, Yoshihiro: *See*—
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Sakaida, Tsutomu: *See*—
Uejima, Hiroyuki; Hirai, Masahide; and Sakaida, Tsutomu, 4,266,045, Cl. 528-161.000.
Sakakiyama, Takashi: *See*—
Kawamura, Takayuki; Tazaki, Kichiya; Sakakiyama, Takashi; and Hasegawa, Toshio, 4,265,977, Cl. 428-511.000.
Sakuma, Kenji: *See*—
Noguchi, Hironori; and Sakuma, Kenji, 4,265,022, Cl. 33-174.00P.
Salomon, Georges P. J., to S.A. Etablissements Francois Salomon & Fils. Ski boot. 4,265,034, Cl. 36-121.000.
Salyer, James R. Power driven dental floss cleaner. 4,265,257, Cl. 132-92.00R.
Samson, Marc: *See*—
Bonnemann, Helmut; and Samson, Marc, 4,266,061, Cl. 546-253.000.
Sandhu, M. Akram: *See*—
Martin, Thomas W.; and Sandhu, M. Akram, 4,266,017, Cl. 430-533.000.
Sandvik, Inc.: *See*—
Fodor, William G., 4,265,285, Cl. 145-31.00R.
Sankyo Company Limited: *See*—
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,265,803, Cl. 260-45.8NZ.
Sanner, Axel: *See*—
Tschang, Chung-Ji; Klefenz, Heinrich; and Sanner, Axel, 4,266,030, Cl. 435-180.000.
Sanner, George E. Electrical fixture intended primarily for outdoor use and designed to protect an electrical device housed therein from the elements. 4,266,266, Cl. 361-357.000.
Sano Kiko Co., Ltd.: *See*—
Kato, Kenichi, 4,265,940, Cl. 427-292.000.
Sano, Takezo; Shimomura, Takatoshi; Murase, Ichiki; and Hirakawa, Manabu, to Sumitomo Chemical Company, Limited. Process for producing semipermeable membranes. 4,265,959, Cl. 428-216.000.
Santilli, Arthur A., to American Home Products Corporation. 1,2-Dihydro-4-hydroxy-2-imino-N-substituted-3-quinolinecarboxamide derivatives. 4,266,050, Cl. 544-128.000.
Sarishvili, Naskid G.; Oreshkina, Alla E.; and Storchevoi, Evgeny N. Continuous-flow wine champagnization process. 4,265,914, Cl. 426-13.000.
Sarkisian, Robert. Two-sided display devices. 4,265,040, Cl. 40-618.000.
Sasaguri, Kiichiro: *See*—
Ueda, Takeshi; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, 4,266,009, Cl. 430-346.000.
Sasaki, Noboru: *See*—
Ishiguro, Shoji; Shishido, Tadao; Sakai, Takeo; Sasaki, Noboru; Nagaoka, Joji; and Matsuki, Minoru, 4,266,018, Cl. 430-550.000.
Sasaki, Yoshiyuki; and Kasaoka, Katsuyuki, to Teijin Limited. Spun-like yarn and a process for manufacturing the same. 4,265,082, Cl. 57-207.000.
Sato, Shosuke: *See*—
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; and Sato, Shosuke, 4,265,173, Cl. 101-79.000.
Sato, Takayuki, to Caterpillar Mitsubishi Ltd. Emergency brake apparatus for track-type vehicle. 4,265,138, Cl. 74-481.000.
Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Clog preventive device for label printing and applying machine. 4,265,176, Cl. 101-292.000.
Satoda, Hajime; Ohta, Hiromi; and Ushirokajitani, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd. Combustion apparatus. 4,265,614, Cl. 431-329.000.
Satoh, Ryozo, to Tel-Thermco Engineering Co., Ltd. Remote-controlled pressure regulator. 4,265,270, Cl. 137-505.390.
Saudreau, Lucien; and Biansan, Jean-Paul, to Thomson-CSF. Microwave polarization transformer. 4,266,203, Cl. 333-21.00A.
Sauer, Donald G., to National Can Coporation. Process for forming a plastic article. 4,265,852, Cl. 264-512.000.
Saurwein, Albert C.: *See*—
Ives, Frank E.; and Saurwein, Albert C., 4,265,581, Cl. 414-228.000.
Sautter, Helmuth O.: *See*—
Chai, Soo Young; Sautter, Helmuth O.; and Sherbon, Wallace E., 4,266,249, Cl. 358-260.000.
Saw, Samuel C. K., to Visy Board Company Pty., Ltd. Reinforced container. 4,265,392, Cl. 229-37.00R.
Sawada, Yasuo: *See*—
Hirakura, Koji; Sawada, Yasuo; and Watase, Kenta, 4,266,141, Cl. 250-564.000.
Schaar, Charles H., to Kendall Company, The. Dressing composite. 4,265,234, Cl. 128-156.000.
Schack, Warren R.: *See*—
Kueper, Theodore V.; Schack, Warren R.; and Rock, Harry, 4,265,918, Cl. 426-264.000.
Schaeffer, Georg: *See*—
Spielmann, Werner; and Schaeffer, Georg, 4,266,066, Cl. 549-64.000.
Schael, Wilfried: *See*—
Schindler, Johannes G.; and Schael, Wilfried, 4,265,249, Cl. 128-635.000.
Schafer, Robert H., to UTI Corporation. Coaxial cable band-pass filter. 4,266,207, Cl. 333-206.000.
Schalk, Karl, to Siemens Aktiengesellschaft. Circuit arrangement for forming a speed-proportional output voltage from a speed-proportional pulse sequence. 4,266,147, Cl. 307-492.000.
Schedel, Michael: *See*—
Kinast, Gunther; and Schedel, Michael, 4,266,025, Cl. 435-84.000.
Scheier, Donald J.: *See*—
Hathorn, Jack L.; and Scheier, Donald J., 4,265,001, Cl. 17-11.000.
Schell, Loni, to Hoechst Aktiengesellschaft. Process for the preparation of planographic printing forms. 4,265,999, Cl. 430-189.000.
Scheller, Arnold D., Jr.; and Quigley, Thomas B. Curved drill attachment for bone drilling uses. 4,265,231, Cl. 128-92.00E.
Schepers, James S.; and Gloor, Cary A., to United States of America, Agriculture. Automatic moisture control for roller applicator. 4,265,048, Cl. 47-1.500.
Scherer, Jeremy D., to Isotronics, Incorporated. All metal flat package having excellent heat transfer characteristics. 4,266,089, Cl. 174-52.0FP.
Scherer, Jeremy D., to Isotronics, Incorporated. All metal flat package. 4,266,090, Cl. 174-52.0FP.
Scheve, Bernard J.: *See*—
Hughes, Norman E.; and Scheve, Bernard J., 4,266,007, Cl. 430-306.000.
Schibli, Hans: *See*—
Eidinger, Adolf; Flossel, Carl D.; Koppl, Georg; Ulrich, Alfred; and Schibli, Hans, 4,266,258, Cl. 361-58.000.
Schiesser AG: *See*—
Schiesser, Walter H., 4,265,756, Cl. 210-236.000.
Schiesser, Walter H., to Schiesser AG. Change device for sieves for filtering plastic materials. 4,265,756, Cl. 210-236.000.
Schiff, Hans: *See*—
Tang, Peter; Nielsen, Grethe C.; Gibson, Keith; Aunstrup, Knud; and Schiff, Hans, 4,266,031, Cl. 435-188.000.
Schildknecht, Harold E.: *See*—
Abbin, Joseph P., Jr.; Middleton, John N.; and Schildknecht, Harold E., 4,266,107, Cl. 200-61.530.
Schillinger, Joseph F.; and Nielsen, Arthur R., to Champion International Corporation. Dispensing container. 4,265,366, Cl. 221-33.000.
Schindler, Johannes G.; and Schael, Wilfried, to Dr. E. Fresenius Chemisch pharmazeutisch Industrie KG. Catheter device and system for continuous chemical analysis of body fluids. 4,265,249, Cl. 128-635.000.
Schlossbauer, Hubert: *See*—
Heinzl, Joachim; Schlossbauer, Hubert; Miller, Heide-Marie; and Uhden, Irene, 4,266,280, Cl. 364-900.000.
Schlumberger Technology Corp.: *See*—
Moulin, Pierre A., 4,265,110, Cl. 73-151.000.
Schmidhauser, Rolf, to LGZ Landis & Gyr Zug AG. Method and apparatus for identification of documents. 4,266,122, Cl. 235-454.000.
Schmidt, Herbert: *See*—
Birkenstock, Udo; Lachmann, Burkhard; Metten, Josef; and Schmidt, Herbert, 4,265,834, Cl. 564-421.000.
Schmidt, Manfred: *See*—
Riegler, Ernst; and Schmidt, Manfred, 4,265,136, Cl. 74-380.000.
Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,265,923, Cl. 426-538.000.
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,265,818, Cl. 260-345.200.
Schmitz, Jurgen: *See*—
Fricke, Jobst; Voigt, Wolfgang; and Schmitz, Jurgen, 4,265,157, Cl. 84-1.190.
Schnelle, Eldon D.: *See*—
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Schnoes, Heinrich K.: *See*—
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,265,822, Cl. 260-397.200.
Scholtz, Myndert T. Combustion catalysts. 4,265,639, Cl. 44-57.000.
Scholz, Dankmar: *See*—
Hesse, Anton; Lechtken, Peter; Nicolaus, Walter; and Scholz, Dankmar, 4,265,723, Cl. 204-159.230.
Scholz, Harald: *See*—
Legutke, Gunter; Scholz, Harald; and Schuchardt, Kurt, 4,265,837, Cl. 570-243.000.
Schreiber, Roland: *See*—
Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,266,205, Cl. 333-165.000.
Schreyer, Kenneth D.; Leverentz, Earl T.; Nusz, Thomas R.; and Benton, Reuben P., to Columbus McKinnon Corporation. Rolling bearing wheel and hub support combination. 4,265,181, Cl. 105-150.000.
Schrock, Martin O.; Howard, Thomas J., Jr.; and Jinkins, Danny R., to Black & Decker Inc. Grass trimmer device. 4,265,018, Cl. 30-276.000.
Schroeder, Becky J. Electroluminescent backing sheet for reading and writing in the dark. 4,266,164, Cl. 315-169.100.
Schroeder, Roger A., to American Can Company. Apparatus for handling wound rolls of fibrous webs. 4,265,361, Cl. 209-617.000.
Schubert & Salzer: *See*—
Braun, Erwin; Bock, Erich; Handschuch, Karl; and Schuller, Edmund, 4,265,083, Cl. 57-263.000.
Schuchardt, Kurt: *See*—
Legutke, Gunter; Scholz, Harald; and Schuchardt, Kurt, 4,265,837, Cl. 570-243.000.
Schuh, Heinz, to Kraftwerk Union AG. Method of using nitrogen-containing polyester resins as epoxy resin hardening accelerators in winding bands for high-voltage insulation of electric machines and apparatus and mica tape therefor. 4,265,966, Cl. 428-324.000.

Schuller, Edmund: *See—*
Braun, Erwin; Bock, Erich; Handschuch, Karl; and Schuller, Edmund, 4,265,083, Cl. 57-263.000.
Schuller, Ivan K.: *See—*
Kampwirth, Robert T.; Schuller, Ivan K.; and Falco, Charles M., 4,266,008, Cl. 430-318.000.
Schulze, Everett E., Jr. Solenoid actuated container crusher. 4,265,170, Cl. 100-49.000.
Schulzke, Peter: *See—*
Streit, Klaus; Harsch, Klaus; and Schulzke, Peter, 4,266,261, Cl. 361-154.000.
Schundehutte, Karl H.: *See—*
Nickel, Horst; and Schundehutte, Karl H., 4,265,813, Cl. 260-170.000.
Schupphaus, Herbert; and Klimeck, Hugo, to Gerb. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Track on a conveyor for a mining machine. 4,265,488, Cl. 299-43.000.
Schuurink, Pieter H. J.; and Noomen, Arie, to Akzo N.V. Method for coating an object made of a vulcanized polyalkylene rubber. 4,265,973, Cl. 428-424.800.
Schwanbom, Erik; and Warnow, Detlef, to Dragerwerk Aktiengesellschaft. Apparatus for enhancing a person's breathing and/or artificial respiration. 4,265,237, Cl. 128-204.240.
Schwartz, Albert B., to Mobil Oil Corporation. Cracking catalyst. 4,265,787, Cl. 252-455.00Z.
Schwarzer, Klemens, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Method and apparatus for separating fission and activation products from gas atmospheres. 4,265,707, Cl. 176-37.000.
Scicluna, Augustin: *See—*
Prudhon, Francois; and Scicluna, Augustin, 4,265,702, Cl. 159-48.00R.
Scodino, Ambrogio, to Saipem, S.p.A. Apparatus for supporting pipes suspended over depressions in the sea bed, including those situated at great depth, and the method for installing it. 4,265,566, Cl. 405-172.000.
Scorteanu, Ionel R., to Institutul De Cercetart Si Proiectari Tehnologice In Transporturi. Apparatus for car counting and discrimination. 4,265,419, Cl. 246-247.000.
Scott, James J., to Midcontinent Specialties Manufacturing, Inc. Cable sling for support and stabilization of underground openings. 4,265,571, Cl. 405-259.000.
Scott, Orland B.; and Van Camp, Garrett S., to Ford Motor Company. Disk brake mounting. 4,265,340, Cl. 188-73.300.
Scott Paper Company: *See—*
Cox, Jon N.; and Singh, Balbir, 4,265,409, Cl. 242-56.00A.
Seaberg, David H., to J. I. Case Company. Pushbeam to blade hinge connection. 4,265,319, Cl. 172-811.000.
Sebalos, Adam. Pressure liquid dispenser. 4,265,374, Cl. 222-95.000.
Seel, Ralph G., to Singer Company, The. Locking device for mounting pins and the like. 4,265,562, Cl. 403-374.000.
Seifert, Gerd: *See—*
Franke, Kurt; and Seifert, Gerd, 4,266,134, Cl. 250-409.000.
Seiko Seiki Kabushiki Kaisha: *See—*
Ito, Shohei, 4,265,054, Cl. 51-5.00D.
Seki, Masatoshi, to Hitachi, Ltd. Utilizing simultaneous masking and diffusion of peripheral substrate areas. 4,265,685, Cl. 148-174.000.
Sekiya, Fukuo: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,266,278, Cl. 364-705.000.
Sekiya, Masayoshi: *See—*
Yabe, Masao; Tatsuta, Sumitaka; Ochiai, Takeji; Suzuki, Tamotsu; and Sekiya, Masayoshi, 4,265,946, Cl. 427-393.500.
Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Cationic amine-functional copolymer mixture with aminoplast resin and aqueous baths containing the same. 4,265,795, Cl. 260-29.300.
Semperit Aktiengesellschaft: *See—*
Haberl, Rainer; and Kastner, Josef, 4,266,263, Cl. 361-283.000.
Senzaki, Chikara, to Manyo Tool Kabushiki Kaisha. Tool holder. 4,265,460, Cl. 279-97.000.
Seragnoli, Enzo, to G.D. S.p.A. Apparatus for forming and overwrapping batches of products. 4,265,073, Cl. 53-542.000.
Seuter, Friedel: *See—*
Horstmann, Harald; Meng, Karl-August, deceased; Meng, Matthias, legal representative; Seuter, Friedel; and Moller, Eike, 4,265,898, Cl. 424-270.000.
Severance, Wesley A.; and Shaw, Julie Y. L., to General Signal Corporation. Multi-layered, fiberglass-reinforced floor covering systems. 4,265,957, Cl. 428-143.000.
SGS ATES Componenti Elettronici S.p.A.: *See—*
Bertotti, Franco; and Foroni, Mario, 4,266,233, Cl. 357-22.000.
SGS ATES Componenti Elettronicie S.P.A.: *See—*
Palara, Sergio, 4,266,199, Cl. 330-274.000.
Shafer, Bernice A. Car tray and exercising apparatus. 4,265,447, Cl. 272-73.000.
Shaffer, Francis N., to GTE Products Corporation. Cerium activated yttrium gadolinium phosphate x-ray phosphors, process for producing same, an x-ray intensifying screen employing same. 4,266,137, Cl. 250-483.000.
Shah, Raj: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,265,795, Cl. 260-29.300.
Shank, Herbert C., Jr., to Anchor Hocking Corporation. Thermoplastic ink decorated, polymer coated glass articles. 4,265,947, Cl. 428-35.000.
Sharp Kabushiki Kaisha: *See—*
Inoue, Tomohiro; and Masuzawa, Sigeaki, 4,266,096, Cl. 179-1.50M.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,188, Cl. 112-158.00B.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,189, Cl. 112-158.00E.
Shaw, Julie Y. L.: *See—*
Severance, Wesley A.; and Shaw, Julie Y. L., 4,265,957, Cl. 428-143.000.
Shea, Andrew S.; and Shea, Frances. Wheel and ground engaging emergency brake. 4,265,338, Cl. 188-4.00R.
Shea, Frances: *See—*
Shea, Andrew S.; and Shea, Frances, 4,265,338, Cl. 188-4.00R.
Sheehan, John C.; and Commons, Thomas J., to Massachusetts Institute of Technology. Sulphur analogs of penicillins having a nucleophile substituted in the 6 and 7 position, respectively. 4,265,882, Cl. 424-114.000.
Sheehy, Michael J.; Sondel, Paul M.; Bach, Fritz H.; Bach, Marilyn L.; and Wank, Rudolf, to Wisconsin Alumni Research Foundation. Method for typing human leukocyte antigens. 4,265,873, Cl. 424-1.000.
Shell Internationale Research Maatschappij B.V.: *See—*
Feakins, Patrick G., 4,265,876, Cl. 424-28.000.
Shell Oil Company: *See—*
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., 4,266,085, Cl. 585-645.000.
Shen, Kuo-Cheng; Fung, David P. C.; and Calve, Louis, to Canadian Patents and Development Limited. Method of binding lignocellulosic materials. 4,265,846, Cl. 264-109.000.
Shen, Tsung-Ying; and Jones, Howard, to Merck & Co., Inc. Method of treating inflammation employing acyl cyanoguanidines. 4,265,905, Cl. 424-304.000.
Shephard, Margaret C.: *See—*
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,266,056, Cl. 544-311.000.
Sherbon, Wallace E.: *See—*
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Sheremeta, Ostap O.: *See—*
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Shevchuk, Viktor I.: *See—*
Goncharov, Evgeny S.; Prilutsky, Anatoly N.; and Shevchuk, Viktor I., 4,265,738, Cl. 209-31.000.
Shibazaki, Kenji; Arai, Kenichi; Kitagawa, Tsuneo; Murata, Tomoji; and Nagata, Kenzo, to Minolta Camera Kabushiki Kaisha. Computer-controlled paper feeder. 4,265,440, Cl. 271-9.000.
Shieh, Shii-San: *See—*
Kao, Dai-Hae; and Shieh, Shii-San, 4,266,217, Cl. 340-573.000.
Shimakata, Ryuji; and Naito, Kazuyoshi, to Tokyo Press & Die Co., Ltd. Method for molding a bulge. 4,265,102, Cl. 72-58.000.
Shimano Industrial Company, Limited: *See—*
Nagano, Masashi, 4,265,140, Cl. 139-501.00R.
Shimizu, Yoshiaki: *See—*
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,266,023, Cl. 435-28.000.
Shimoie, Shizuo: *See—*
Matsubara, Yoshitaka; Shimoie, Shizuo; Watanabe, Takao; and Tomiyama, Yoshio, 4,265,494, Cl. 305-12.000.
Shimomura, Junichi: *See—*
Ohashi, Nobuo; Ono, Yutaka; Nohara, Kiyohiko; Shimomura, Junichi; and Miyawaki, Tetsuo, 4,265,679, Cl. 148-12.00E.
Shimomura, Takatoshi: *See—*
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Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Process for producing oxygen sensing element. 4,265,930, Cl. 427-34.000.
Shinohara, Yukimasa; and Ichihashi, Hiroo, to Canon Kabushiki Kaisha. Apparatus for fixing heat-fusible toner images formed on a web. 4,265,198, Cl. 118-695.000.
Shiozawa, Shinji: *See—*
Kaneko, Yoshio; Yamauchi, Makoto; Shiozawa, Shinji; Hayakawa, Yoshihiro; and Banba, Fumio, 4,265,288, Cl. 152-209.00R.
Shishido, Tadao: *See—*
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Sholl, Jeffrey J.: *See—*
Anderson, George R.; Ott, Walter R.; Smoke, Edward J.; Easter, Ross A.; and Sholl, Jeffrey J., 4,266,108, Cl. 219-10.55E.
Shukla, Jayendra G.: *See—*
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Shuman, Robert T.: *See—*
Gesellchen, Paul D.; and Shuman, Robert T., 4,265,808, Cl. 260-112.50R.

Shutt, Paul B., to Bendix Corporation, The. Master cylinder and sleeve for controlling a proportioning valve. 4,265,491, Cl. 303-6.00C.
Shutt, Richard W.: *See—*
Romanelli, Pat; Romanelli, Robert J.; and Shutt, Richard W., 4,265,612, Cl. 431-66.000.
Shutterly, Harold B., to Westinghouse Electric Corp. Scrambling system for television sound signals. 4,266,243, Cl. 358-121.000.
Siekanowicz, Wieslaw W., to RCA Corporation. Electron current collector for flat panel display devices. 4,266,159, Cl. 313-422.000.
Siemens Aktiengesellschaft: *See—*
Betzl, Hermann; Hebenstreit, Ernst; and Schreiber, Roland, 4,266,205, Cl. 333-165.000.
Franke, Kurt; and Seifert, Gerd, 4,266,134, Cl. 250-409.000.
Friebel, Eberhard, 4,265,145, Cl. 74-805.000.
Greubel, Waldemar; and Krueger, Hans, 4,265,516, Cl. 350-345.000.
Heinzl, Joachim; and Kattner, Erich, 4,266,250, Cl. 358-285.000.
Heinzl, Joachim; Schlossbauer, Hubert; Miller, Heide-Marie; and Uhden, Irene, 4,266,280, Cl. 364-900.000.
Herbst, Heiner; Pfleiderer, Hans-Jorg; Koch, Rudolf; and Tihanyi, Jeno, 4,266,235, Cl. 357-30.000.
Hoffmann, Kurt; and Ernst, Roland, 4,266,151, Cl. 307-297.000.
Holzler, Georg; and Knoche, Jochem, 4,266,169, Cl. 318-490.000.
Lange, Gerhard; and Boy, Juergen, 4,266,260, Cl. 361-120.000.
Schalk, Karl, 4,266,147, Cl. 307-492.000.
Winstel, Guenter, 4,265,720, Cl. 204-129.000.
Siemens Corporation: *See—*
Dunbar, Ronald C., 4,266,101, Cl. 179-84.00C.
Weigl, Walter; Bergman, Ulf; and Baum, Lennart, 4,266,133, Cl. 250-402.000.
Sifferman, Thomas R., to Conoco, Inc. Method of transporting viscous hydrocarbons. 4,265,264, Cl. 137-13.000.
Sigma Systems, Inc.: *See—*
Reuter, Daniel L.; Reid, Philip L.; Blackburn, Charles M.; and Heffner, Clifton W., 4,265,074, Cl. 53-551.000.
Sih, John C., to Upjohn Company, The. 19-Hydroxy-7,8-didehydro-PGI_1 compounds. 4,265,820, Cl. 260-346.220.
Sih, John C., to Upjohn Company, The. 11-Deoxy-inter-phenylene-19-oxo-PGF_1 compounds. 4,266,072, Cl. 560-53.000.
Silk, George R.; and Midgelow, David. Motorcycle gear box and rear wheel suspension system. 4,265,330, Cl. 180-230.000.
Silvestrini, Jesus A. Method and apparatus for producing pitted olives. 4,265,169, Cl. 99-494.000.
Simm, Walter; and Bestenreiner, Friedrich, to AGFA-Gevaert, A.G. Method of improving the electrical contact between the insulating image carrier and conductive support in electrographic recording processes. 4,265,996, Cl. 430-119.000.
Simpson, Robert S.: *See—*
Freeman, Danny M.; Knight, Milton M., Jr.; Payton, Clarence M.; Simpson, Robert S.; and Smith, Howard B., Jr., 4,264,993, Cl. 8-149.000.
Sinclair, Robert E.: *See—*
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Singer Company, The: *See—*
Batson, William A., 4,265,154, Cl. 83-468.000.
Herr, John A.; and Jaffe, Wolfgang, 4,266,152, Cl. 310-59.000.
Niemela, Paul W., 4,266,155, Cl. 310-239.000.
Seel, Ralph G., 4,265,562, Cl. 403-374.000.
Singer, Malcolm S., to Chevron Research Company. Cellulose fermentation process. 4,266,033, Cl. 435-252.000.
Singh, Balbir: *See—*
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Sinnema, Hendrik, to Machinefabriek W. Hubert & Co. B.V. Apparatus for positioning prismatic bricks upon a longitudinal small side, symmetrically with respect to each other. 4,265,354, Cl. 198-374.000.
Skawinski, Henry M.: *See—*
Hobrecht, Stephen W.; Skawinski, Henry M.; Chiu, Kh; and Hee, Wong, 4,266,254, Cl. 360-62.000.
Skewis, John D.: *See—*
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SKF Nova AB: *See—*
Lundgren, Bengt, 4,265,455, Cl. 277-53.000.
Skideli, Seymour S. Beverage carbonation and dispensing container. 4,265,376, Cl. 222-189.000.
Skimovex B. V.: *See—*
Verpalen, Willem A.; and Koot, Theodorus A. J., 4,265,759, Cl. 210-261.000.
Skipper, Kevin G. Plug mix seed planter. 4,265,185, Cl. 111-1.000.
Skoch, Leroy V.; Harmon, Bud G.; Dickerson, Charles W.; and Chou, Nelson S., to Ralson Purina Company. Animal feed block containing ferrous sulfate and finely ground magnesium oxide. 4,265,916, Cl. 426-74.000.
Skoli, Sigmund P.: *See—*
Mojonnier, Harry G.; and Skoli, Sigmund P., 4,265,167, Cl. 99-323.200.
Slaker, Frank A., to Intec Corporation. Multiple source laser scanning inspection system. 4,265,545, Cl. 356-431.000.
Slater Electric Inc.: *See—*
Boteler, William C., 4,265,365, Cl. 220-3.300.
Slevolden, Sverre: *See—*
Nes, Aasmund E.; and Slevolden, Sverre, 4,265,676, Cl. 148-2.000.
Slobodchikov, Vladimir B.: *See—*
Piterskikh, Georgy P.; Sukhov, Stanislav A.; Slobodchikov, Vladimir B.; Sutyagin, Ivan S.; and Terentiev, Albert M., 4,265,617, Cl. 432-58.000.
Slough, Carlton M., to Texaco Inc. Method and apparatus for measuring effectiveness of a corrosion inhibitor. 4,266,187, Cl. 324-65.0CR.
Sluys, Wesley W., to Builders Concrete, Inc. Concrete marine float and method of fabricating. 4,265,193, Cl. 114-267.000.
Small, William J.: *See—*
Jackson, Liam R.; Weidner, John P.; Small, William J.; and Martin, James A., 4,265,416, Cl. 244-2.000.
Smallegan, Jon M., to Novo Products, Inc. Article dryer. 4,265,030, Cl. 34-104.000.
Smallwood, Paul R., Jr.: *See—*
Watson, Thomas E.; and Smallwood, Paul R., Jr., 4,265,589, Cl. 415-47.000.
Smejda, Richard K. Central support arrangement for printing systems. 4,265,175, Cl. 101-115.000.
Smirl, Richard L., to Borg-Warner Corporation. Automotive accessory drive. 4,265,135, Cl. 74-336.00B.
Smith, Clay D.; and Keller, Douglas V., Jr., to Otisca Industries, Ltd. Methods and apparatus for transporting and processing solids. 4,265,737, Cl. 209-3.000.
Smith, Howard B., Jr.: *See—*
Freeman, Danny M.; Knight, Milton M., Jr.; Payton, Clarence M.; Simpson, Robert S.; and Smith, Howard B., Jr., 4,264,993, Cl. 8-149.000.
Smith International, Inc.: *See—*
Morris, John F.; and Worrell, Robert V., 4,265,324, Cl. 175-329.000.
Smith, James D.; and Miller, James A., to Aluminum Company of America. Apparatus and method for removing closures from containers assembled in cases. 4,265,071, Cl. 53-492.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,265,896, Cl. 424-263.000.
Smith, Ray E.: *See—*
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Smith, Robert K.: *See—*
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SmithKline Corporation: *See—*
Brush, Charles K.; and Weinstock, Joseph, 4,265,889, Cl. 424-244.000.
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Smoke, Edward J.: *See—*
Anderson, George R.; Ott, Walter R.; Smoke, Edward J.; Easter, Ross A.; and Sholl, Jeffrey J., 4,266,108, Cl. 219-10.55E.
SNIA Viscosa Societa' Nazionale Industria: *See—*
Rossi, Pier P.; Tempesti, Aldo; and Filippi, Aldo, 4,265,628, Cl. 8-115.500.
Snook, Randolph W.: *See—*
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Snow, Kenneth A., to Computervision Corporation. Apparatus and method for fine alignment of a photomask to a semiconductor wafer. 4,265,542, Cl. 356-356.000.
Sobata, Tamotu: *See—*
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Societa Italiana Telecomunicazioni Siemens S.p.A.: *See—*
Spada, Bernardino, 4,266,198, Cl. 329-50.000.
S.A. Etablissements Francois Salomon & Fils: *See—*
Salomon, Georges P. J., 4,265,034, Cl. 36-121.000.
S.A. Martin: *See—*
Berthelot, Daniel, 4,265,443, Cl. 271-182.000.
Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
Buhler, Marcel; Olofsson, Mats; and Fosseux, Pierre-Yves, 4,265,924, Cl. 426-582.000.
Societe d'Etudes de Produits Chimiques: *See—*
Demosthene, Claude G.; and Aspisi, Christian R., 4,266,058, Cl. 544-330.000.
Societe Lignes Telegraphiques et Telephoniques: *See—*
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Societe Marinoni: *See—*
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Societe Metallurgique le Nickel S. L. N.: *See—*
Limare, Armand; and Maillot, Francois, 4,265,718, Cl. 204-96.000.
Soelberg, Kenneth B.; Stark, Marvin M.; Thompson, Tommy H.; and Yamaguchi, Akia, to Marvin M. Stark Research Foundation. Clamp for a dental dam. 4,265,623, Cl. 433-139.000.
Solar Energy Technology, Inc.: *See—*
Herskovitz, Sheldon B.; Marlin, Jay; and Stiglitz, Martin R., 4,265,618, Cl. 433-32.000.
Solent & Pratt (Engineering) Limited: *See—*
Thurston, Victor N.; and Marshall, Geoffrey B., 4,265,426, Cl. 251-306.000.
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, to Sankyo Company Limited. Polymers containing polyalkylpiperidines and use thereof as stabilizers. 4,265,803, Cl. 260-45.8NZ.
Sommer, Klaus: *See—*
Gohla, Werner; Hestermann, Klaus; Kandler, Joachim; Wasel-Nielen, Horst-Dieter; Sommer, Klaus; Rohlfs, Hans-Adolf; and Merkenich, Karl, 4,265,776, Cl. 252-98.000.
Sondel, Paul M.: *See—*
Sheehy, Michael J.; Sondel, Paul M.; Bach, Fritz H.; Bach, Marilyn L.; and Wank, Rudolf, 4,265,873, Cl. 424-1.000.

Sonenstein, Gerard G., to Colgate-Palmolive Company. Soap bar. 4,265,778, Cl. 252-117.000.

Sony Corporation: *See—*
Yoshida, Tadao, 4,266,149, Cl. 307-255.000.

Sorenson, Marius W.: *See—*
Ezzell, Bobby R.; Malone, Jacquelyn M.; and Sorenson, Marius W., 4,265,719, Cl. 204-98.000.

Sozio, Ralph B.: *See—*
Starling, Lynn B.; Stephan, James E.; and Stroud, Robert D., 4,265,669, Cl. 106-73.400.

Spada, Bernardino, to Societa Italiana Telecomunicazioni Siemens S.p.A. Sampling system for decoding biphase-coded data messages. 4,266,198, Cl. 329-50.000.

Spano, John D.; and Barnett, Danny R. Test probe alignment apparatus. 4,266,191, Cl. 324-158.00F.

Specht, Paul B., to Vallen Corporation. Protective splash goggle. 4,264,988, Cl. 2-431.000.

Specht, Paul B.: *See—*
Duwell, Michael J.; and Specht, Paul B., 4,265,584, Cl. 414-412.000.

Spence, Kemet D.; and Andrews, Robert E., to Battelle Development Corporation. Microbial insecticide. 4,265,880, Cl. 424-93.000.

Sperry Corporation: *See—*
McMahon, Donald H., 4,265,509, Cl. 350-3.780.

Sperry Rand Corporation: *See—*
Jacoby, George V., 4,266,204, Cl. 333-28.00R.

Sperti, George S.; and Berberick, Norbert J., Jr. Method of treating gelatin capsules and product resulting therefrom. 4,265,926, Cl. 427-2.000.

Spica, Joseph P., to 2500 Corporation, The. Disposable toothbrush with self-contained toothpaste supply. 4,265,560, Cl. 401-183.000.

Spielau, Paul: *See—*
Kuhnel, Werner; and Spielau, Paul, 4,266,041, Cl. 521-92.000.

Spielmann, Werner; and Schaeffer, Georg, to Hoechst Aktiengesellschaft. Process for the manufacture of ketones. 4,266,066, Cl. 549-64.000.

Spink, Robert W.: *See—*
Braun, Dennis H.; and Spink, Robert W., 4,266,175, Cl. 318-758.000.

Spittler, Siegfried: *See—*
Dreher, Ernst; Stroezel, Reinhold; Spittler, Siegfried; and Wolf, Richard, 4,265,604, Cl. 418-43.000.

Sportelli, Louis; and Winterstein, James F. Composite shielding means and mounting means for x-ray machines. 4,266,139, Cl. 250-515.000.

Spradling, Michael D. Apparatus for winding fire hose. 4,265,414, Cl. 242-86.200.

Sprague Electric Company: *See—*
Maher, Galeb H., 4,266,265, Cl. 361-321.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Use of cyclohexenemethanols in augmenting or enhancing the aroma or taste of foodstuffs. 4,265,923, Cl. 426-538.000.

Sprecker, Mark A.: *See—*
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,265,818, Cl. 260-345.200.

Spurmach Espana S. L.: *See—*
Creus, Rufino, 4,265,081, Cl. 57-75.000.

Staats, William J. Bucket dredging and conveying system. 4,265,036, Cl. 37-71.000.

Stahlhofen, Paul; and Erdmann, Fritz, to Hoechst Aktiengesellschaft. Photosensitive copying composition. 4,266,000, Cl. 430-192.000.

Stalherm, Dieter: *See—*
Bocsanczy, Janos; Offermann, Ludwig; and Stalherm, Dieter, 4,265,709, Cl. 201-4.000.

Stalter, Robert J., to Goodyear Tire & Rubber Company, The. Reinforced foamed body support member. 4,265,484, Cl. 297-452.000.

Stamicarbon, B.V.: *See—*
de Cooker, Mario G. R. T.; and Haemers, Anita G. W. G., 4,266,052, Cl. 544-192.000.

Standard Oil Company: *See—*
Durbin, Anthony T.; and Kennedy, Bruce A., 4,265,486, Cl. 299-2.000.
Elkins, Lincoln F., 4,265,307, Cl. 166-248.000.

Standard Oil Company (Indiana): *See—*
Allen, John K., 4,266,084, Cl. 585-469.000.

Stanley, Louis; and Sinclair, Robert E., to Card-O-Matic Pty. Limited. Automatic dialing device. 4,266,102, Cl. 179-90.0CS.

Staples, Edward J.: *See—*
Lim, Teong C.; and Staples, Edward J., 4,265,124, Cl. 73-703.000.

Stark, Marvin M.: *See—*
Soelberg, Kenneth B.; Stark, Marvin M.; Thompson, Tommy H.; and Yamaguchi, Akia, 4,265,623, Cl. 433-139.000.

Starling, Lynn B.; Stephan, James E.; and Stroud, Robert D., to Coors Porcelain Company; Sozio, Ralph B.; and Riley, Edwin J., part interest to each. Shrink-free ceramic and method and raw batch for the manufacture thereof. 4,265,669, Cl. 106-73.400.

Stauffer Chemical Company: *See—*
Arzoumanidis, Gregory G.; and Darragh, Kirk V., 4,265,866, Cl. 423-304.000.
Felix, Raymond A., 4,265,658, Cl. 71-118.000.
Pallos, Ferenc M., 4,266,078, Cl. 564-91.000.

Steckler, Steven A.: *See—*
Balaban, Alvin R.; and Steckler, Steven A., 4,266,245, Cl. 358-153.000.

Steelcase Inc.: *See—*
Raftery, William B.; Whitwam, Ronald L.; and Wisniewski, Joseph M., 4,265,483, Cl. 297-440.000.

Steensma, Peter D.; Haussmann, Robert H.; and Polcer, Anton J., to International Telephone and Telegraph Corporation. Fault locating arrangement for a two-way repeatered transmission link. 4,266,183, Cl. 324-52.000.

Steiner, Edward L.: *See—*
Daughton, John W.; Wilczek, Stephen P.; and Steiner, Edward L., 4,266,294, Cl. 371-24.000.

Stella, Joseph A.; and Wright, Joseph H., to Polaroid Corporation. Disc camera. 4,265,525, Cl. 354-76.000.

Stellfox, Samuel K.: *See—*
Naruns, Laimons; Terry, Dennis W.; and Stellfox, Samuel K., 4,265,579, Cl. 414-138.000.

Stephan, James E.: *See—*
Starling, Lynn B.; Stephan, James E.; and Stroud, Robert D., 4,265,669, Cl. 106-73.400.

Sterling Drug Inc.: *See—*
Copa, William M.; and Gitchel, Wayne B., 4,265,747, Cl. 210-758.000.
Lesher, George Y.; and Gruett, Monte D., 4,265,895, Cl. 424-256.000.

Stevens, Fred C. Controlled wheel braking system. 4,265,343, Cl. 188-181.00T.

Stevens, Peter: *See—*
Rosegren, Donald R.; Johnson (Bulsiewicz), Noreen C.; and Stevens, Peter, 4,265,715, Cl. 204-46.00R.

Stevens, Richard A.: *See—*
Emmert, Philip H.; Stevens, Richard A.; and Walkush, Glenn A., 4,265,208, Cl. 123-440.000.

Stevenson, R. G.: *See—*
Hatton, C. W.; Orr, J. C.; and Stevenson, R. G., 4,265,593, Cl. 416-183.000.

Steyer, William: *See—*
Weinstein, Barry; and Steyer, William, 4,265,646, Cl. 55-306.000.

Stiglitz, Martin R.: *See—*
Herskovitz, Sheldon B.; Marlin, Jay; and Stiglitz, Martin R., 4,265,618, Cl. 433-32.000.

Stiltz, Erwin; Lindenmayer, Heinz; Geis, Wilhelm; and Wolf, Otto, to Licentia Patent-Verwaltungs-G.m.b.H. Home work bench. 4,265,435, Cl. 269-139.000.

Stock, Howard P.: *See—*
Mercer, Paul W.; and Stock, Howard P., 4,265,687, Cl. 156-73.100.

Stoeckl, Max: *See—*
Erhardt, Manfred; and Stoeckl, Max, 4,265,575, Cl. 409-8.000.

Stol, George H.: *See—*
Peisner, Israel D.; and Stol, George H., 4,265,183, Cl. 105-410.000.

Stolka, Milan; Pai, Damodar M.; and Yanus, John F., to Xerox Corporation. Imaging system with a diamine charge transport material in a polycarbonate resin. 4,265,990, Cl. 430-59.000.

Stolz, Gary M.: *See—*
Baird, Leslie L.; and Stolz, Gary M., 4,265,583, Cl. 414-284.000.

Stone, Arnold F.; and Kinnard, William D., to CPS Industries. Method for producing tear tape and seal and tear line for packaging. 4,265,692, Cl. 156-180.000.

Stone, Frederick A.; and Holcomb, Normand P., to Teleco Oilfield Services Inc. Mounting and shock absorber assembly for borehole telemetry apparatus. 4,265,305, Cl. 166-113.000.

Stonich, Timothy. Inclined arm support for stroke victims. 4,265,232, Cl. 128-133.000.

Stoody, William R. Pressurized dispenser with dip tube extending through sac-in-can. 4,265,373, Cl. 222-94.000.

Stookey, Stanley D., to Corning Glass Works. Color photographic process utilizing polychromatic glass. 4,266,012, Cl. 430-396.000.

Stopinc Aktiengesellschaft: *See—*
Meier, Ernst, 4,265,379, Cl. 222-600.000.

Storchevoi, Evgeny N.: *See—*
Sarishvili, Naskid G.; Oreshkina, Alla E.; and Storchevoi, Evgeny N., 4,265,914, Cl. 426-13.000.

Stout, Gregg W., to Otis Engineering Corporation. Latch for well tools. 4,265,306, Cl. 166-237.000.

Strasser, Jurgen H.: *See—*
Chiu, Tony T.; Wright, Bruce M.; Strasser, Jurgen H.; and Harper, Bruce M., 4,265,168, Cl. 99-448.000.

Stratton, Donald W., to Anderson Company of Indiana, The. Windshield wiper flexor. 4,264,998, Cl. 15-250.420.

Streit, Klaus; Harsch, Klaus; and Schulzke, Peter, to Robert Bosch GmbH. Method and apparatus for operating an electromagnetic load, especially an injection valve in internal combustion engines. 4,266,261, Cl. 361-154.000.

Stroezel, Reinhold: *See—*
Dreher, Ernst; Stroezel, Reinhold; Spittler, Siegfried; and Wolf, Richard, 4,265,604, Cl. 418-43.000.

Stroh Brewery Co., The: *See—*
Fraser, Daniel M.; Hausner, John E.; Hawkins, William J.; and Comiskey, Frederick K., 4,266,106, Cl. 200-61.440.

Stroud, Robert D.: *See—*
Starling, Lynn B.; Stephan, James E.; and Stroud, Robert D., 4,265,669, Cl. 106-73.400.

Strouse, Earl. Apparatus for installing shingles onto a roof. 4,265,387, Cl. 227-7.000.

Struger, Odo J.; and Dummermuth, Ernst H., to Allen-Bradley Company. Microprogrammed programmable controller. 4,266,281, Cl. 364-900.000.

Stubbings, James H., to Potomac Applied Mechanics, Inc. Steel stock cutting. 4,265,156, Cl. 83-530.000.
Stuckmann, Dieter; and Jutte, Hans, to Gewerkschaft Eisenhutte Westfalia. Tunnel drive shield. 4,265,565, Cl. 405-145.000.
Studi Apparecchiature E Ricerche Tecniche: *See*—
Fasano, Osvaldo, 4,265,345, Cl. 192-3.00R.
Studiengesellschaft Kohle mbH: *See*—
Bonnemann, Helmut; and Samson, Marc, 4,266,061, Cl. 546-253.000.
Studio One Services, Inc.: *See*—
Johnson, David J., 4,265,059, Cl. 52-66.000.
Stuhr, Leslie P., to Honeywell Inc. Averaging temperature responsive apparatus. 4,265,115, Cl. 73-349.000.
Suchanski, Mary R.; and Bishara, Jeries I., to Diamond Shamrock Corporation. Method and electrode with manganese dioxide coating. 4,265,728, Cl. 204-290.00F.
Suenaga, Yoshiyuki: *See*—
Nakamura, Shohei; and Suenaga, Yoshiyuki, 4,266,005, Cl. 430-271.000.
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Imafuku, Shigehisa, to Mizusawa Kagaku Kogyo Kabushiki Kaisha. Process for treating bauxite or similar raw material. 4,265,864, Cl. 423-121.000.
Sugimoto, Shigetoki: *See*—
Matsushita, Shigeo; Ishikawa, Ro; Kaede, Kazuhisa; Mito, Ikuo; and Sugimoto, Shigetoki, 4,265,513, Cl. 350-96.200.
Sugitachi, Akio; Takagi, Kunihiko; and Yabushita, Yasunori, to Unitika Ltd. Material for wound healing. 4,265,233, Cl. 128-156.000.
Suk, Albert, to Conn Chem Group, Limited. Aerosol water-based paint composition. 4,265,797, Cl. 260-29.60E.
Sukhov, Stanislav A.: *See*—
Piterskikh, Georgy P.; Sukhov, Stanislav A.; Slobodchikov, Vladimir B.; Sutyagin, Ivan S.; and Terentiev, Albert M., 4,265,617, Cl. 432-58.000.
Sukrushev, Vitaly S.: *See*—
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Sullivan, Joseph T. Fire alarm heat sensor. 4,265,194, Cl. 116-106.000.
Sulzer Brothers Limited: *See*—
Baumann, Heinz; and Caille, Charles, 4,265,277, Cl. 139-1.00R.
Jassniker, Kurt, 4,265,278, Cl. 139-1.00C.
Sumikawa, Seizi; and Harada, Takesi, to Diesel Kiki Co., Ltd. Temperature control apparatus for an automobile air conditioner. 4,265,395, Cl. 236-13.000.
Sumitomo Chemical Company Limited: *See*—
Fujimoto, Keimei; Ohno, Nobuo; Okuno, Yoshitoshi; Mizutani, Toshio; Ohno, Isao; Hirano, Masachika; Itaya, Nobushige; and Matsuo, Takashi, 4,266,074, Cl. 560-105.000.
Kasamatsu, Kiyoshi; Ohsumi, Tadashi; Itaya, Nobushige; Ohno, Nobuo; and Kato, Takashi, 4,265,906, Cl. 424-304.000.
Sano, Takezo; Shimomura, Takatoshi; Murase, Ichiki; and Hirakawa, Manabu, 4,265,959, Cl. 428-216.000.
Sumitomo Electric Industries, Ltd.: *See*—
Miyake, Masaya; Nakano, Minol; Yamamoto, Takaharu; and Hara, Akio, 4,265,662, Cl. 75-238.000.
Summo, Arthur M., to Branson Ultrasonics Corporation. Method of forming a corner in a thermoplastic material using ultrasonic vibrations. 4,265,842, Cl. 264-23.000.
Sumner, Lee E., Jr.; Cooper, Kenneth W.; and Abendschein, Frederic H., to Borg-Warner Corporation. Microcomputer control for supplemental heating with night set-back. 4,265,298, Cl. 165-2.000.
Sun Electric Corporation: *See*—
Karlin, Richard A.; McDonald, Robert W.; and Comiskey, Gary F., 4,266,189, Cl. 324-117.00H.
Sundberg, Sture, to Aktiebolaget Platmanufaktur. Method and apparatus for folding a tubular length of hose material to form a package. 4,265,439, Cl. 493-451.000.
Sundgren, Anders: *See*—
Rowa, Jan-Erik; and Sundgren, Anders, 4,265,328, Cl. 180-89.130.
Suonvieri, Elaine. Device for releasably holding relatively slim articles. 4,265,362, Cl. 211-60.00R.
Suszko, Donald H.; and Zens, John F., to General Motors Corporation. Inflatable restraint system. 4,265,468, Cl. 280-729.000.
Sutphin, Howard D.; and Lieber, Albert J., to General Engineering & Applied Research. Proximity focused streak tube and streak camera using the same. 4,266,247, Cl. 358-217.000.
Sutyagin, Ivan S.: *See*—
Piterskikh, Georgy P.; Sukhov, Stanislav A.; Slobodchikov, Vladimir B.; Sutyagin, Ivan S.; and Terentiev, Albert M., 4,265,617, Cl. 432-58.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seatbelt system. 4,265,480, Cl. 280-803.000.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, to Aisin Seiki Kabushiki Kaisha; and Sharp Kabushiki Kaisha. Electric sewing machine. 4,265,188, Cl. 112-158.00B.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, to Sharp Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Sewing pattern displaying arrangements. 4,265,189, Cl. 112-158.00E.
Suzuki, Mon: *See*—
Kawazoe, Kazuyoshi; Takata, Yoshinori; Suzuki, Mon; and Uehara, Shizuo, 4,266,196, Cl. 324-464.000.
Suzuki, Shigeru; and Ohsawa, Kazuo. Electron microscope with optical microscope. 4,266,128, Cl. 250-311.000.
Suzuki, Tamotsu: *See*—
Yabe, Masao; Tatsuta, Sumitaka; Ochiai, Takeji; Suzuki, Tamotsu; and Sekiya, Masayoshi, 4,265,946, Cl. 427-393.500.
Sweet, Barry A.; and Linnell, John W. Building system. 4,265,061, Cl. 52-93.000.
Swetly, Peter; Adolf, Gunther R.; Bodo, Gerhard; Lindner-Frimmel, Silvia J.; Meindl, Peter; and Tuppy, Hans, to Boehringer Ingelheim GmbH. Process for the production of human interferon. 4,266,024, Cl. 435-68.000.
Swiatosz, Edmund; Dykes, Wiley V.; Grimmer, Paul D.; and Lane, Bruce V., to United States of America, Navy. Simulated oxygen breathing apparatus. 4,265,238, Cl. 128-205.120.
Swift & Company: *See*—
Kueper, Theodore V.; Schack, Warren R.; and Rock, Harry, 4,265,918, Cl. 426-264.000.
Swiss Aluminium Ltd.: *See*—
Blome, James C., 4,265,659, Cl. 75-93.00R.
SWS Silicones Corporation: *See*—
Newton, Harry V., 4,265,800, Cl. 260-37.0SB.
Sybron Corporation: *See*—
Blair, James E.; and Davis, Lois T., 4,266,035, Cl. 435-253.000.
Sylvania Inc.: *See*—
Wellington, Charles K.; Dakss, Mark L.; and Benasutti, John E., 4,265,514, Cl. 350-96.210.
Synthelabo: *See*—
Najer, Henry; and Obitz, Daniel, 4,265,911, Cl. 424-326.000.
T. Y. Lin International: *See*—
Lin, Tung-Yen; Yang, Yue-Chyou; and Chow, Philip Y., 4,265,066, Cl. 52-224.000.
Tabakov, Vladimir P.: *See*—
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Tabler, Donald C.; and Gray, Bobby G., to Phillips Petroleum Company. De-ashing lubricating oils. 4,265,733, Cl. 208-179.000.
Tachibana, Kunitaka: *See*—
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,265,654, Cl. 71-86.000.
Taguchi, Tetsuya: *See*—
Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, 4,265,521, Cl. 354-23.00D.
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, to Nisshin Flour Milling Co., Ltd. Isoprenylamines. 4,265,910, Cl. 424-325.000.
Taiyo Steel Co., Ltd.: *See*—
Kameya, Toru; Makino, Shinichi; and Tsuruta, Masayuki, 4,265,937, Cl. 427-163.000.
Takagi, Kunihiko: *See*—
Sugitachi, Akio; Takagi, Kunihiko; and Yabushita, Yasunori, 4,265,233, Cl. 128-156.000.
Takagi, Tosio. Sprinkler nozzle. 4,265,405, Cl. 239-440.000.
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Process for manufacture of assembled cam shaft. 4,265,388, Cl. 228-135.000.
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; and Sato, Shosuke, to Tokyo Keiki Company Ltd.; and Totec Co., Ltd. Numbering machine with check digit function. 4,265,173, Cl. 101-79.000.
Takahashi, Shuichi. Electronic musical instrument. 4,265,158, Cl. 84-1.220.
Takahashi, Tohru: *See*—
Toyono, Tsutomu; Nakamura, Shunji; Kanbe, Junichiro; Tamura, Yasuyuki; and Takahashi, Tohru, 4,265,197, Cl. 118-657.000.
Takahashi, Toshihiro: *See*—
Tahara, Yoshiyuki; Koyama, Hiroyasu; Komatsu, Yasuhiro; Kubota, Reiko; and Takahashi, Toshihiro, 4,265,910, Cl. 424-325.000.
Takai, Kiyoshi: *See*—
Sugahara, Yujiro; Naito, Hiroyuki; Takai, Kiyoshi; and Imafuku, Shigehisa, 4,265,864, Cl. 423-121.000.
Takano, Rikuo: *See*—
Tateishi, Kazuyoshi; Hoshino, Yasushi; and Takano, Rikuo, 4,265,989, Cl. 430-57.000.
Takase, Akio; Tsutsumi, Takao; and Tsukahara, Hiroaki, to Mitsubishi Denki Kabushiki Kaisha. Cooking control circuit for cooking range. 4,266,118, Cl. 219-492.000.
Takata, Yoshinori: *See*—
Kawazoe, Kazuyoshi; Takata, Yoshinori; Suzuki, Mon; and Uehara, Shizuo, 4,266,196, Cl. 324-464.000.
Takayama, Hiroshi: *See*—
Kouchi, Toshihiro; Takayama, Hiroshi; and Aizawa, Tatsuo, 4,265,992, Cl. 430-107.000.
Takeda Chemical Industries: *See*—
Hashimoto, Naoto; and Kishi, Toyokazu, 4,265,814, Cl. 260-239.30P.

Takei, Haruo: *See*—
Ikeda, Tadashi; Sakai, Takeo; Takei, Haruo; and Inoue, Noriyuki, 4,266,003, Cl. 430-264.000.

Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, to Meiji Seika Kaisha Ltd. Herbicidal compositions. 4,265,654, Cl. 71-86.000.

Taketani, Yutaka: *See*—
Kawaguchi, Takeyuki; Taketani, Yutaka; Hayashi, Yuzuru; Ono, Tomoyoshi; and Mori, Koh, 4,265,745, Cl. 210-654.000.

Takeuchi, Yasuhiro: *See*—
Arao, Umeo; Egami, Tsuneyuki; Kosuda, Tooru; and Takeuchi, Yasuhiro, 4,265,163, Cl. 91-361.000.

Talke, Frank E.: *See*—
Juliana, Anthony, Jr.; Koepcke, Richard W.; Mills, Ross N.; and Talke, Frank E., 4,266,232, Cl. 346-140.00R.

Talres Development (N.A.) N.V.: *See*—
Pace, Gary W.; and Holding, Trevor J., 4,265,673, Cl. 106-177.000.

Tamai, Yasuo; and Ogawa, Hiroshi, to Fuji Photo Film Co., Ltd. Process for the production of a magnetic recording member. 4,265,931, Cl. 427-48.000.

Tambourin, Pierre: *See*—
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,266,060, Cl. 546-64.000.

Tamura, Yasuyuki: *See*—
Toyono, Tsutomu; Nakamura, Shunji; Kanbe, Junichiro; Tamura, Yasuyuki; and Takahashi, Tohru, 4,265,197, Cl. 118-657.000.

Tanaka, Hitoshi: *See*—
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; and Tanaka, Hitoshi, 4,265,668, Cl. 106-73.300.

Tanaka, Mitsugu: *See*—
Kobayashi, Hidetoshi; Tanaka, Mitsugu; Inouye, Kozo; and Naito, Hideki, 4,266,019, Cl. 430-551.000.

Tanaka, Tamotsu; Kato, Michio; Uematsu, Masataka; Nishida, Yoshikazu; and Hosokawa, Shuji, to Matsushita Electric Industrial Co., Ltd. Electrically powered torque-controlled tool. 4,265,320, Cl. 173-12.000.

Tang, Peter; Nielsen, Grethe C.; Gibson, Keith; Aunstrup, Knud; and Schiff, Hans, to Novo Industri A/S. Protease product of reduced allergenicity. 4,266,031, Cl. 435-188.000.

Tang, Sunny C.: *See*—
Kim, Leo; Paxson, Timm E.; and Tang, Sunny C., 4,266,085, Cl. 585-645.000.

Tanimoto, Fumio: *See*—
Inoue, Yoshiharu; Tanimoto, Fumio; and Kitano, Hisao, 4,266,055, Cl. 544-221.000.

Tappe, Horst: *See*—
Ribka, Joachim; Tappe, Horst; Roth, Kurt; and Weyer, Hans-Jurgen, 4,265,629, Cl. 8-449.000.

Tashma, Zev: *See*—
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,265,896, Cl. 424-263.000.

Tateishi, Kazuyoshi; Hoshino, Yasushi; and Takano, Rikuo, to Nippon Telegraph & Telephone Public Corporation. Photosensitive member for electrophotography. 4,265,989, Cl. 430-57.000.

Tatsuta, Sumitaka: *See*—
Yabe, Masao; Tatsuta, Sumitaka; Ochiai, Takeji; Suzuki, Tamotsu; and Sekiya, Masayoshi, 4,265,946, Cl. 427-393.500.

Tatum, Joe F., to C. E. Equipment Co., Inc. Anode connection. 4,265,725, Cl. 204-196.000.

Tayco Developments, Inc.: *See*—
Taylor, Paul H., 4,265,344, Cl. 188-322.000.

Taylor, George O., to Bondgrade Limited. Work bench. 4,265,284, Cl. 144-287.000.

Taylor, Glenn N., to Kendall Company, The. Collection container with siphon assembly. 4,265,243, Cl. 128-275.000.

Taylor, Kenneth A.: *See*—
Charlesworth, Frank D. W.; Dover, William D.; and Taylor, Kenneth A., 4,266,185, Cl. 324-64.000.

Taylor, Paul H., to Tayco Developments, Inc. Liquid spring with integral plastic body and seal and fabrication method therefor. 4,265,344, Cl. 188-322.000.

Taylor, Samuel K.: *See*—
Kuwik, John J.; Braden, Arthur B.; Taylor, Samuel K.; and Covic, John, 4,266,135, Cl. 250-445.00T.

Tazaki, Kichiya: *See*—
Kawamura, Takayuki; Tazaki, Kichiya; Sakakiyama, Takashi; and Hasegawa, Toshio, 4,265,977, Cl. 428-511.000.

TDK Electronics Co., Ltd.: *See*—
Fujiwara, Shinobu; Furukawa, Kiyoshi; Kikuchi, Nobuaki; Iizawa, Osamu; and Tanaka, Hitoshi, 4,265,668, Cl. 106-73.300.

Tebbens, Klaas; Fischer, Erhardt; and Lo, Jhy-Dou R., to Polysar Limited. Particulate rubber process. 4,265,939, Cl. 427-222.000.

Teche, Andre: *See*—
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,265,817, Cl. 260-343.30R.

Tecnocar S p A: *See*—
Villani, Franco; and Marciante, Antonina, 4,265,748, Cl. 210-132.000.

Teger, Gerhard: *See*—
Lippacher, Wolfgang; and Teger, Gerhard, 4,265,008, Cl. 29-240.000.

Teige, Wolfgang: *See*—
Papenfuhs, Theodor; and Teige, Wolfgang, 4,265,632, Cl. 8-512.000.

Teijin Limited: *See*—
Imanaka, Yoshihiko; Nakamatsu, Hiroshi; Horike, Akihiro; Saito, Yoichi; and Iwata, Kaoru, 4,266,053, Cl. 544-196.000.
Kawaguchi, Takeyuki; Taketani, Yutaka; Hayashi, Yuzuru; Ono, Tomoyoshi; and Mori, Koh, 4,265,745, Cl. 210-654.000.
Sasaki, Yoshiyuki; and Kasaoka, Katsuyuki, 4,265,082, Cl. 57-207.000.

Teiling, Torbern, to Aktiebolaget Bofors. Device for determining vertical direction. 4,265,111, Cl. 73-178.00R.

Tel-Thermco Engineering Co., Ltd.: *See*—
Satoh, Ryozo, 4,265,270, Cl. 137-505.390.

Teleco Oilfield Services Inc.: *See*—
Stone, Frederick A.; and Holcomb, Normand P., 4,265,305, Cl. 166-113.000.

Teledyne Industries, Inc.: *See*—
Johnson, Donald L., 4,265,507, Cl. 339-176.0MF.

Temme, Helmut, to Gewerkschaft Eisenhutte Westfalia. Scraper assembly for a scraper chain conveyor. 4,265,359, Cl. 198-731.000.

Tempesti, Aldo: *See*—
Rossi, Pier P.; Tempesti, Aldo; and Filippi, Aldo, 4,265,628, Cl. 8-115.500.

Tenta, Louis T. Composition containing sodium fluoride in a chewing gum base. 4,265,877, Cl. 424-48.000.

Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; an.t Shimizu, Yoshiaki, to Kyowa Hakko Kogyo Co., Ltd. Glycerol oxidase and process for the production thereof and method for the quantitative determination of glycerol by glycerol oxidase. 4,266,023, Cl. 435-28.000.

Teraoka, Masao, to Tochigi-Fuji Sangyo Kabushiki Kaisha. Hub clutch. 4,265,349, Cl. 192-95.000.

Terentiev, Albert M.: *See*—
Piterskikh, Georgy P.; Sukhov, Stanislav A.; Slobodchikov, Vladimir B.; Sutyagin, Ivan S.; and Terentiev, Albert M., 4,265,617, Cl. 432-58.000.

Terliska, Jacques, to Arjomari-Prioux. Method of preparing a fibrous structure containing metallic fibers. 4,265,703, Cl. 162-146.000.

Terry, Dennis W.: *See*—
Naruns, Laimons; Terry, Dennis W.; and Stellfox, Samuel K., 4,265,579, Cl. 414-138.000.

Terry, Ruel C.: *See*—
Magnie, Robert L., 4,265,309, Cl. 166-252.000.

Teruyama, Hideo, to Kayabakogyokabushikikaisha. Gear pump with low pressure shaft lubrication. 4,265,602, Cl. 418-1.000.

Tessier, Jean: *See*—
Martel, Jacques; Tessier, Jean; and Teche, Andre, 4,265,817, Cl. 260-343.30R.

Tetra Consultants, Inc.: *See*—
Van Ewijk, William, 4,265,902, Cl. 424-273.00R.

Texaco Dev. Corp.: *See*—
McEntire, Edward E.; and Gipson, Robert M., 4,265,821, Cl. 260-348.160.

Texaco Development Corp.: *See*—
Knifton, John F., 4,265,828, Cl. 260-449.00L.

Texaco Inc.: *See*—
Kessler, Richard V.; and Corbeels, Roger J., 4,265,407, Cl. 241-21.000.
Slough, Carlton M., 4,266,187, Cl. 324-65.0CR.

Texacone Company, The: *See*—
Wheeler, John H., 4,265,458, Cl. 277-205.000.

Texas Instruments Incorporated: *See*—
Hornbeck, Larry J.; and Hosack, Harold H., 4,266,234, Cl. 357-24.000.

Textron, Inc.: *See*—
Ditsler, Erwin P., 4,265,576, Cl. 409-129.000.
Holmes, Howard H., 4,265,113, Cl. 73-266.000.
Moertel, George B., 4,265,190, Cl. 112-265.200.

Thayer, Victor R. Process and apparatus for reducing the energy required to separate liquids by distillation. 4,265,736, Cl. 208-353.000.

Theeuwes, Felix: *See*—
Bonsen, Pieter; Wong, Patrick S.; and Theeuwes, Felix, 4,265,874, Cl. 424-15.000.

Thein, Dennis J., to Thein Well Company, Incorporated. Method for developing water wells. 4,265,312, Cl. 166-312.000.

Thein Well Company, Incorporated: *See*—
Thein, Dennis J., 4,265,312, Cl. 166-312.000.

Theobald, Adolf. Arrangement for storing of pallets used for holding material. 4,265,582, Cl. 414-279.000.

Thiel, John A.: *See*—
Cox, Arthur; Thiel, John A.; and Nodov, Eugene, 4,266,252, Cl. 358-293.000.

Thijssen, Henricus A. C., to Douwe Egberts Koninklijke Tabaksfabriek, Koffiebranderijen en Theehandel B.V. Process for concentration of alcoholic beverages. 4,265,920, Cl. 426-384.000.

Thoma, Paul E.; Crum, Louis J.; and Frias, Ronald J. Surface temperature detecting apparatus. 4,265,117, Cl. 73-359.00R.

Thomas, Dean L.: *See*—
Reese, Thomas J.; and Thomas, Dean L., 4,265,650, Cl. 65-104.000.

Thomas, James P., to Amstar Corporation. Separation of suspended solids from phosphate tailings. 4,265,770, Cl. 210-715.000.

Thomas, Jerome P. Horseshoe with a continuous wedge-shaped calk. 4,265,315, Cl. 168-/29.000.

Thomas, Richard W., to American Cyanamid Company. Polymeric light stabilizers containing tetralkyl piperidine moieties. 4,265,805, Cl. 260-45.80N.

Thomason, Harry E. Solar heating (cooling) system. 4,265,219, Cl. 126-419.000.

Thompson, Francis, to Mobil Oil Corporation. Method and apparatus for measuring a component in a flow stream. 4,266,188, Cl. 324-65.00R.
Thompson, Tommy H.: *See—*
Soelberg, Kenneth B.; Stark, Marvin M.; Thompson, Tommy H.; and Yamaguchi, Akia, 4,265,623, Cl. 433-139.000.
Thomson-CSF: *See—*
Leclerc, Pierre; Puech, Claude; Papuchon, Michel; and Lallemand, Pierre, 4,265,541, Cl. 356-350.000.
Matherat, Philippe, 4,266,253, Cl. 358-903.000.
Saudreau, Lucien; and Biansan, Jean-Paul, 4,266,203, Cl. 333-21.00A.
Thorson, Donald L.: *See—*
Chamoff, Martin E.; Miller, Irving L.; and Thorson, Donald L., 4,266,271, Cl. 364-200.000.
Thurner, Gary H.: *See—*
Presnall, Lance O.; and Thurner, Gary H., 4,265,332, Cl. 181-211.000.
Thurston, Victor N.; and Marshall, Geoffrey B., to Solent & Pratt (Engineering) Limited. Butterfly valve. 4,265,426, Cl. 251-306.000.
Tickner, Ernest G., to Rasor Associates, Inc. Method of determining pressure within liquid containing vessel. 4,265,251, Cl. 128-660.000.
Tihanyi, Jeno: *See—*
Herbst, Heiner; Pfleiderer, Hans-Jorg; Koch, Rudolf; and Tihanyi, Jeno, 4,266,235, Cl. 357-30.000.
Timmerman, Daniel M.; De Winter, Walter F.; and Van Hoof, Albert E., to AGFA-GEVAERT N.V. Novel polymeric mordanting agents for anionic compounds. 4,266,044, Cl. 525-336.000.
Tinger, Harold G.: *See—*
Arbit, Harold A.; and Tinger, Harold G., 4,265,960, Cl. 428-220.000.
Tkacenko, Nikola. Switching power supply having energy storage inductor in primary circuit of output transformer. 4,266,268, Cl. 363-49.000.
Tkalenko, Victor J., Jr.: *See—*
Mowry, William H., Jr.; McElligott, Michael J.; Tkalenko, Victor J., Jr.; and Baran, Joseph, 4,265,469, Cl. 283-8.00B.
Toba, Akira, to Tokyo Shibaura Denki Kabushiki Kaisha. Fly-back transformer. 4,266,269, Cl. 363-68.000.
Tobishi Pharmaceutical Co., Ltd.: *See—*
Yamashina, Ikuo; Kawasaki, Toshisuke; and Tsukuda, Michiko, 4,265,881, Cl. 424-106.000.
Tochigi-Fuji Sangyo Kabushiki Kaisha: *See—*
Teraoka, Masao, 4,265,349, Cl. 192-95.000.
Todeschini, Giuseppe, to Exfin, S.A. Method and device for cutting a metal strip simultaneously into at least three continuous comb-shaped components. 4,265,104, Cl. 72-330.000.
Togashi, Shyuichi: *See—*
Furusawa, Motoyoshi; Horio, Motohiko; Togashi, Shyuichi; and Ohmiya, Akio, 4,265,412, Cl. 242-71.400.
Toji, Masuo: *See—*
Bauman, Donald L.; and Toji, Masuo, 4,265,810, Cl. 260-141.000.
Tokico Ltd.: *See—*
Ishihara, Kanji, 4,265,339, Cl. 188-72.500.
Tokutomi, Seijiro; Jyojiki, Masao; and Nakamura, Kazuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Focus detecting device in single lens reflex camera. 4,265,520, Cl. 354-23.00D.
Tokyo Engine Kogyo Kabushiki Kaisha: *See—*
Hasegawa, Hiroshi, 4,265,622, Cl. 433-101.000.
Tokyo Keiki Company Ltd.: *See—*
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; and Sato, Shosuke, 4,265,173, Cl. 101-79.000.
Tokyo Press & Die Co., Ltd.: *See—*
Shimakata, Ryuji; and Naito, Kazuyoshi, 4,265,102, Cl. 72-58.000.
Tokyo Rope Mfg. Co., Ltd.: *See—*
Hachisuka, Shunji; Kurashige, Shinji; and Saahiro, Yasuo, 4,265,678, Cl. 148-12.00B.
Tokyo Shibaura Denki K.K.: *See—*
Hirose, Masahiko; and Akai, Yoshimi, 4,265,730, Cl. 204-298.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Fujimori, Yoshinori; Ishizawa, Akio; and Hashimoto, Minoru, 4,265,841, Cl. 264-22.000.
Hirose, Minoru, 4,266,121, Cl. 235-381.000.
Toba, Akira, 4,266,269, Cl. 363-68.000.
Tolaas, William M.: *See—*
Faller, Rudolph A.; and Tolaas, William M., 4,265,390, Cl. 229-30.000.
Tomalia, Donald A.: *See—*
Owen, Peter W.; Harmon, Zita K.; and Tomalia, Donald A., 4,265,825, Cl. 260-401.000.
Tomiyama, Yoshio: *See—*
Matsubara, Yoshitaka; Shimoie, Shizuo; Watanabe, Takao; and Tomiyama, Yoshio, 4,265,494, Cl. 305-12.000.
Tomlinson, Harvard L.: *See—*
Kierbow, Gerald C.; Tomlinson, Harvard L.; Horinek, Herbert J.; and Crain, Stephen F., 4,265,266, Cl. 137-101.190.
Topp, Bernhard: *See—*
Haecker, Wolf-Dieter; Friese, Karl-Hermann; and Topp, Bernhard, 4,265,724, Cl. 204-195.00S.
Toray Industries, Inc.: *See—*
Ebitani, Atsushi; Inoue, Takehisa; and Tsunoi, Kazuo, 4,265,788, Cl. 252-455.00Z.
Hatada, Kenji; Kobayashi, H.; and Yokura, Miyoshi, 4,265,276, Cl. 138-177.000.
Toro Company, The: *See—*
Hunter, Edwin J., 4,265,404, Cl. 239-186.000.
Torre, Giancarlo D., to Rockwell-Rimoldi, S.p.A. Apparatus for applying elastic rings to tubular garments. 4,265,187, Cl. 112-121.260.
Toshiba Kikai Kabushiki Kaisha: *See—*
Asakuma, Kazutaka; and Kikuchi, Tsuyoshi, 4,265,297, Cl. 164-303.000.
Totec Co., Ltd.: *See—*
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; and Sato, Shosuke, 4,265,173, Cl. 101-79.000.
Tovim, Igal. Horse shoes. 4,265,314, Cl. 168-4.000.
Toyo Kogyo Co., Ltd.: *See—*
Mashimo, Tohru, 4,266,171, Cl. 318-571.000.
Toyo Rubber Chemical Industrial Corporation: *See—*
Fujii, Osamu; Kishimoto, Toshio; and Kobayashi, Akio, 4,266,043, Cl. 521-175.000.
Toyo Rubber Industry Co., Ltd., The: *See—*
Inoue, Teruo, 4,265,292, Cl. 152-354.00R.
Toyono, Tsutomu; Nakamura, Shunji; Kanbe, Junichiro; Tamura, Yasuyuki; and Takahashi, Tohru, to Canon Kabushiki Kaisha. Developing method and apparatus using application of first and second alternating bias voltages for latent image end portions and tone gradation, respectively. 4,265,197, Cl. 118-657.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,265,930, Cl. 427-34.000.
Suzuki, Ichiro; Motonami, Masanao; and Ogawa, Hisashi, 4,265,480, Cl. 280-803.000.
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,265,388, Cl. 228-135.000.
Trafalgar Industries Inc.: *See—*
Desai, Mahendrakumar D.; and Henderson, Drew, 4,265,371, Cl. 222-70.000.
Transelektro Magyar Villamossagi Kulkereskedelmi Vallalat: *See—*
Heller, Laszlo; Forgo, Laszlo; Papp, Istvan; Bodas, Janos; Kovacs, Gyula; and Laszlo, Karoly, 4,265,275, Cl. 138-38.000.
Trelford, Aston M.: *See—*
Hunt, Peter; and Trelford, Aston M., 4,265,847, Cl. 264-122.000.
Tremco, Incorporated: *See—*
Kumins, Charles A.; and Warford, Milan L., 4,265,967, Cl. 428-332.000.
Triangle Corporation, The: *See—*
Nash, Edward M.; and Johnson, Edward M., Jr., 4,265,283, Cl. 144-286.00R.
Trillwood, Richard E., to Wentgate Engineers (1976) Limited. Apparatus for transferring work through a region of reduced pressure for the performance of an operation thereon. 4,266,111, Cl. 219-121.0EN.
Tromp, Gerardus M. Paper sheet cartridge. 4,264,992, Cl. 4-244.000.
True Temper Corporation: *See—*
Luebke, Robert W., 4,265,398, Cl. 238-1.000.
Trusty, Von A. Combination portable intrusion alarm and flashlight. 4,266,216, Cl. 340-546.000.
Tsai, Wen-Ying. Strobed liquid display device and head therefor. 4,265,402, Cl. 239-20.000.
Tsao, George T.; Dale, Bruce E.; and Ladisch, Michael R., to Purdue Research Foundation. Nontoxic cellulose solvent and process for forming and utilizing the same. 4,265,675, Cl. 127-37.000.
Tschang, Chung-Ji; Klefenz, Heinrich; and Sanner, Axel, to BASF Aktiengesellschaft. Macroporous polymeric carrier for covalently binding proteins, its preparation and its use for fixing active proteins. 4,266,030, Cl. 435-180.000.
Tsuchiya, Takuzo; Fang, Jin-Liou; and Rasmussen, Glen, to General Mills, Inc. Induction heating method for processing food material. 4,265,922, Cl. 426-520.000.
Tsujii, Yasuhiro: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,266,064, Cl. 546-345.000.
Tsujino, Nobuyuki: *See—*
Adachi, Keiichi; Hirano, Shigeo; and Tsujino, Nobuyuki, 4,266,013, Cl. 430-410.000.
Tsukahara, Hiroaki: *See—*
Takase, Akio; Tsutsumi, Takao; and Tsukahara, Hiroaki, 4,266,118, Cl. 219-492.000.
Tsukuda, Michiko: *See—*
Yamashina, Ikuo; Kawasaki, Toshisuke; and Tsukuda, Michiko, 4,265,881, Cl. 424-106.000.
Tsumuki, Chiaki: *See—*
Takahashi, Akio; Tsumuki, Chiaki; Nakamura, Hitoshi; and Ozaki, Juro, 4,265,388, Cl. 228-135.000.
Tsunoi, Kazuo: *See—*
Ebitani, Atsushi; Inoue, Takehisa; and Tsunoi, Kazuo, 4,265,788, Cl. 252-455.00Z.
Tsuruoka, Takashi: *See—*
Takematsu, Tetsuo; Konnai, Makoto; Tachibana, Kunitaka; Tsuruoka, Takashi; Inouye, Shigeharu; and Watanabe, Tetsuro, 4,265,654, Cl. 71-86.000.
Tsuruta, Masayuki: *See—*
Kameya, Toru; Makino, Shinichi; and Tsuruta, Masayuki, 4,265,937, Cl. 427-163.000.
Tsutsumi, Takao: *See—*
Takase, Akio; Tsutsumi, Takao; and Tsukahara, Hiroaki, 4,266,118, Cl. 219-492.000.
Tsuya, Noboru; and Arai, Kenichi, to Tsuya, Norboru. High silicon steel thin strips and a method for producing the same. 4,265,682, Cl. 148-112.000.
Tsuya, Norboru: *See—*
Tsuya, Noboru; and Arai, Kenichi, 4,265,682, Cl. 148-112.000.

Tunador Engineering, Inc.: *See*—
Tunador, Malik; and Wangu, Manoj K., 4,265,608, Cl. 425-149.000.
Tunador, Malik; and Wangu, Manoj K., to Tunador Engineering, Inc. Endless belt molding apparatus. 4,265,608, Cl. 425-149.000.
Tupper, Alan W.; and Flux, Peter R., to Tupper, Alan William. Load-transfer device. 4,265,179, Cl. 104-182.000.
Tupper, Alan William: *See*—
Tupper, Alan W.; and Flux, Peter R., 4,265,179, Cl. 104-182.000.
Tuppy, Hans: *See*—
Swetly, Peter; Adolf, Gunther R.; Bodo, Gerhard; Lindner-Frimmel, Silvia J.; Meindl, Peter; and Tuppy, Hans, 4,266,024, Cl. 435-68.000.
Turner, James T.: *See*—
Chubbuck, John G.; and Turner, James T., 4,265,252, Cl. 128-748.000.
Tutarinov, Valery M.: *See*—
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Tyler, Derek E.: *See*—
Gaule, Gerhart K.; Yarwood, John C.; Tyler, Derek E.; and Yun, Ik Y., 4,265,294, Cl. 164-49.000.
Tyler Refrigeration Corporation: *See*—
Abraham, Fayez, 4,265,092, Cl. 62-155.000.
Abraham, Fayez F., 4,265,090, Cl. 62-82.000.
Tzikas, Athanassios, to Ciba-Geigy AG. Process for the manufacture of vat dyes. 4,265,633, Cl. 8-650.000.
Uchidoi, Masanori; Iwashita, Tomonori; Taguchi, Tetsuya; Iura, Yukio; Ichiyanagi, Toshikazu; and Aizawa, Hiroshi, to Canon Kabushiki Kaisha. Digital control camera. 4,265,521, Cl. 354-23.00D.
Uda, Masayuki; and Hayakawa, Yoshiichi, to Hosiden Electronics Co., Ltd. Cathode ray tube socket with a spark gap. 4,266,158, Cl. 313-325.000.
Uddeholms Aktiebolag AB: *See*—
Billgren, Per A.; and Karlsson, Stig A., 4,265,700, Cl. 159-47.00R.
Uebbing, John J.: *See*—
Epstein, Howard C.; and Uebbing, John J., 4,266,125, Cl. 250-231.0SE.
Ueda, Hiroshi; and Saito, Mitsuru, to Minolta Camera Kabushiki Kaisha. Camera provided with a data recording device. 4,265,526, Cl. 354-106.000.
Ueda, Kazuyoshi, to Nippon Electric Co., Ltd. Transistor having emitter resistors for stabilization at high power operation. 4,266,236, Cl. 357-34.000.
Ueda, Takeshi; Sasaguri, Kiichiro; and Kobayashi, Hidehiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Imaging material and method of producing image thereon. 4,266,009, Cl. 430-346.000.
Uehara, Shizuo: *See*—
Kawazoe, Kazuyoshi; Takata, Yoshinori; Suzuki, Mon; and Uehara, Shizuo, 4,266,196, Cl. 324-464.000.
Uejima, Hiroyuki; Hirai, Masahide; and Sakaida, Tsutomu, to Unitika Ltd. Etherified phenolic chelate resin, process for its production, and method for adsorption treatment. 4,266,045, Cl. 528-161.000.
Uematsu, Masataka: *See*—
Tanaka, Tamotsu; Kato, Michio; Uematsu, Masataka; Nishida, Yoshikazu; and Hosokawa, Shuji, 4,265,320, Cl. 173-12.000.
Uhden, Irene: *See*—
Heinzl, Joachim; Schlossbauer, Hubert; Miller, Heide-Marie; and Uhden, Irene, 4,266,280, Cl. 364-900.000.
Uhlig, Fritz; and Wehlmnn, Kurt A., to Hoechst Aktiengesellschaft. Process for the manufacture of imaged articles. 4,266,006, Cl. 430-300.000.
Uhr, Daniel R., Jr.: *See*—
Hoyt, Hazen L., 4th; and Uhr, Daniel R., Jr., 4,265,653, Cl. 71-11.000.
Ulanet, Herman. Snap action thermostats. 4,266,211, Cl. 335-208.000.
Ulrich, Alfred: *See*—
Eidinger, Adolf; Flossel, Carl D.; Koppl, Georg; Ulrich, Alfred; and Schibli, Hans, 4,266,258, Cl. 361-58.000.
UMC Industries, Inc.: *See*—
Koetter, Robert E., 4,265,351, Cl. 194-1.00M.
Unarco Industries, Inc.: *See*—
Loomis, Russell M., 4,265,577, Cl. 410-118.000.
Uniroyal, Inc.: *See*—
Allen, Deborah L.; Farber, Milton; and Skewis, John D., 4,265,986, Cl. 430-18.000.
Uniroyal Ltd.: *See*—
Mishra, Anupama, 4,265,798, Cl. 260-32.400.
United States Gypsum Company: *See*—
Baehr, Donald O.; and Izard, David G., 4,265,979, Cl. 428-171.000.
United States of America
Agriculture: *See*—
Frank, Arlen W., 4,265,945, Cl. 427-353.000.
Schepers, James S.; and Gloor, Cary A., 4,265,048, Cl. 47-1.500.
Army: *See*—
Peters, R. Donald, 4,266,157, Cl. 310-353.000.
Commerce: *See*—
Kuhn, Peter M., 4,266,130, Cl. 250-339.000.
Energy: *See*—
Abbin, Joseph P., Jr.; Middleton, John N.; and Schildknecht, Harold E., 4,266,107, Cl. 200-61.530.
Kampwirth, Robert T.; Schuller, Ivan K.; and Falco, Charles M., 4,266,008, Cl. 430-318.000.
Leitnaker, James M., 4,265,983, Cl. 428-683.000.
Loutfy, Raouf O.; Keller, Rudolf; and Yao, Neng-Ping, 4,265,716, Cl. 204-67.000.
McCreary, William J.; and Carroll, David W., 4,265,982, Cl. 428-608.000.
Health, Education and Welfare: *See*—
Boretos, John W.; and Iriguchi, Norio, 4,265,694, Cl. 156-242.000.
Horwitz, Jerome P.; Neenan, John P.; Misra, Radhey S.; Rozhin, Jurij; Huo, Anne; and Philips, Kerstin D., deceased, 4,266,048, Cl. 536-27.000.
Interior: *See*—
Cheng, Lung; and Cross, Warren G., 4,265,107, Cl. 73-28.000.
National Aeronautics and Space Administration: *See*—
Jackson, Liam R.; Weidner, John P.; Small, William J.; and Martin, James A., 4,265,416, Cl. 244-2.000.
Nola, Frank J., 4,266,177, Cl. 318-810.000.
Navy: *See*—
Denton, Medona B.; Windsor, David L.; and Heine, David R., 4,266,113, Cl. 219-121.0PQ.
Swiatosz, Edmund; Dykes, Wiley V.; Grimmer, Paul D.; and Lane, Bruce V., 4,265,238, Cl. 128-205.120.
U.S. Philips Corporation: *See*—
Adamek, Manfred; and Wurscher, Horst, 4,265,551, Cl. 400-221.100.
Nicia, Antonius J. A.; and Potters, Cornelis J. T., 4,265,511, Cl. 350-96.180.
Van Roermund, Arthur H. M., 4,266,146, Cl. 307-221.00D.
Van Roosmalen, Johannes H. T., 4,266,248, Cl. 358-223.000.
United Technologies Corporation: *See*—
Fox, Theodore G.; and Zeisser, Melvin H., 4,265,085, Cl. 60-39.060.
Frost, Stuart J.; Riley, Edward J.; and Bogdan, Ronald F., 4,265,023, Cl. 33-174.00C.
Lipman, Kenneth, 4,266,190, Cl. 324-117.00R.
Lohmann, Robert P.; and Markowski, Stanley J., 4,265,615, Cl. 431-353.000.
MacNitt, Donald G., Jr.; and Walker, Bryant H., 4,265,105, Cl. 72-354.000.
Prewo, Karl M., 4,265,968, Cl. 428-336.000.
Rannenberg, George C., 4,265,397, Cl. 237-2.00B.
Unitika Ltd.: *See*—
Sugitachi, Akio; Takagi, Kunihiko; and Yabushita, Yasunori, 4,265,233, Cl. 128-156.000.
Uejima, Hiroyuki; Hirai, Masahide; and Sakaida, Tsutomu, 4,266,045, Cl. 528-161.000.
Universal Precision Machining Co.: *See*—
Graves, Daniel G.; Graves, Vernard L.; and Knudsen, Ernest W., Jr., 4,265,696, Cl. 156-443.000.
University of Houston: *See*—
Cook, Billy D.; and Cavanagh, Eduardo, 4,265,122, Cl. 73-627.000.
University of Missouri, The Curators of the: *See*—
Barker, Clark R., 4,265,487, Cl. 299-34.000.
Unterleitner, Fred C.: *See*—
Kapany, Narinder S.; and Unterleitner, Fred C., 4,265,222, Cl. 126-431.000.
Uozumi, Yukio, to Kawasaki Jukogyo Kabushiki Kaisha. Steering means for guided vehicles. 4,265,180, Cl. 104-247.000.
Upjohn Company, The: *See*—
Sih, John C., 4,265,820, Cl. 260-346.220.
Sih, John C., 4,266,072, Cl. 560-53.000.
Walker, Jerry A., 4,266,069, Cl. 560-20.000.
Ushirokajitani, Yoshiyuki: *See*—
Satoda, Hajime; Ohta, Hiromi; and Ushirokajitani, Yoshiyuki, 4,265,614, Cl. 431-329.000.
Usui, Fumio. Process for producing a multi-layered glass fiber sheet. 4,265,691, Cl. 156-172.000.
UTI Corporation: *See*—
Schafer, Robert H., 4,266,207, Cl. 333-206.000.
Uwabe, Toshio: *See*—
Takahashi, Mutsumi; Uwabe, Toshio; Nagase, Toshio; and Sato, Shosuke, 4,265,173, Cl. 101-79.000.
Uwajima, Takayuki: *See*—
Terada, Osamu; Uwajima, Takayuki; Mihara, Akira; Aisaka, Kazuo; Akita, Hiroko; Nagai, Toshiaki; and Shimizu, Yoshiaki, 4,266,023, Cl. 435-28.000.
Vaananen, Raimo, to Lonnstrom Oy. Control system for central heating. 4,265,396, Cl. 236-68.00R.
Vac-Tec Systems, Inc.: *See*—
Morrison, Charles F., Jr., 4,265,729, Cl. 204-298.000.
Vacuumschmelze GmbH: *See*—
Boll, Richard, 4,265,684, Cl. 148-121.000.
Vallen Corporation: *See*—
Specht, Paul B., 4,264,988, Cl. 2-431.000.
Valmet Oy: *See*—
Pyykkonen, Markku, 4,265,705, Cl. 162-272.000.
Van Camp, Garrett S.: *See*—
Scott, Orland B.; and Van Camp, Garrett S., 4,265,340, Cl. 188-73.300.
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Extra, Piet M. J.; van den Honert, Taco H. J.; and van Lieshout, Jacobus J., 4,265,997, Cl. 430-122.000.
Van Der Meulen, Douglas J.; and Weis, Siegfried K., to C. L. Frost & Son, Inc. Drive disc-pulley assembly. 4,265,133, Cl. 74-194.000.

Van Ewijk, William, to Tetra Consultants, Inc. Therapeutic treatment of horses. 4,265,902, Cl. 424-273.00R.
Van Hoof, Albert E.: *See—*
Timmerman, Daniel M.; De Winter, Walter F.; and Van Hoof, Albert E., 4,266,044, Cl. 525-336.000.
van Keulen, Jacobus M.: *See—*
Blom, Cornelis W.; and van Keulen, Jacobus M., 4,265,958, Cl. 428-166.000.
Van Leeuwen, Matthew J., to Atlantic Richfield Company. Pole mounting solar panel assembly. 4,265,422, Cl. 248-219.100.
van Lieshout, Jacobus J.: *See—*
Extra, Piet M. J.; van den Honert, Taco H. J.; and van Lieshout, Jacobus J., 4,265,997, Cl. 430-122.000.
Van Roermund, Arthur H. M., to U.S. Philips Corporation. Charge transfer devices having switchable blocking electrodes. 4,266,146, Cl. 307-221.00D.
Van Roosmalen, Johannes H. T., to U.S. Philips Corporation. Device having a camera tube. 4,266,248, Cl. 358-223.000.
Van Steenwyk, Brett H., to Applied Technologies Associates. Survey apparatus and method employing canted tilt sensor. 4,265,028, Cl. 33-304.000.
Van Uitert, LeGrand G.: *See—*
Bonner, William A.; and Van Uitert, LeGrand G., 4,265,980, Cl. 428-697.000.
Varian Associates, Inc.: *See—*
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Varma, Ravi K., to E. R. Squibb & Sons, Inc. 17-(Substituted thio)androst-4-ene[16,17,-b]-[1,4]benzodioxin-3-ones. 4,265,815, Cl. 260-239.55R.
Vaughan, Robert W. Clutch. 4,265,350, Cl. 192-95.000.
Vecchiarelli, Francis, to Hunter Douglas International N.V. Support bracket for a venetian blind head rail. 4,265,423, Cl. 248-264.000.
Veenhof, Willem D. Conveyor belt cleaner and scraper blade therefor. 4,265,358, Cl. 198-499.000.
Veith, Gustav G., to Gustav Georg Veith GmbH & Co. KG. Conveyor apparatus for intraplant conveyance. 4,265,178, Cl. 104-88.000.
Vella, Tony J., to Vella, Tony J. Golf club. 4,265,452, Cl. 273-167.00G.
Velsicol Chemical Corporation: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,265,791, Cl. 252-8.100.
Venus Products, Inc.: *See—*
Ives, Frank E.; and Saurwein, Albert C., 4,265,581, Cl. 414-228.000.
Verdicchio, Robert J.: *See—*
Armstrong, David P.; and Verdicchio, Robert J., 4,265,782, Cl. 252-174.190.
Vereinigte Edelstahlwerke Aktiengesellschaft (VEW): *See—*
Plockinger, Erwin; Kuhnelt, Gert; Machner, Peter; and Jager, Heimo, 4,265,295, Cl. 164-52.000.
Verpalen, Willem A.; and Koot, Theodorus A. J., to Ballast-Nedam Groep N.V.; and Skimovex B. V. Device for separating a mixture. 4,265,759, Cl. 210-261.000.
Verreries Mecaniques Champenoises: *See—*
Morel, Jean, 4,265,651, Cl. 65-252.000.
Versteeg, Frits J.; and Groeneweg, Abraham, to N.V. Optische Industrie "De Oude Delft". Device for viewing residual light in the visible and the near infrared spectrum. 4,266,129, Cl. 250-330.000.
Vert, Michel: *See—*
Lenz, Robert W.; and Vert, Michel, 4,265,247, Cl. 128-335.500.
Victor Company of Japan, Limited: *See—*
Ishigaki, Yukinobu, 4,266,296, Cl. 455-303.000.
Itoh, Yasuo, 4,266,244, Cl. 358-142.000.
Villani, Franco; and Marciante, Antonina, to Tecnocar S p A. Lubricant filter for internal combustion engines. 4,265,748, Cl. 210-132.000.
Vinals, Joaquin F.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,265,923, Cl. 426-538.000.
Vinciguerra, Costantino, to Nuovo Pignone, S.p.A. Spherical sealtight valve for fluids. 4,265,427, Cl. 251-315.000.
Visy Board Company Pty., Ltd.: *See—*
Saw, Samuel C. K., 4,265,392, Cl. 229-37.00R.
Vital Industries, Inc.: *See—*
McCoy, Reginald F. H., 4,266,242, Cl. 358-22.000.
Vivitar Corporation: *See—*
Lloyd, Havelock D., 4,266,163, Cl. 315-151.000.
Vock, Manfred H.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,265,923, Cl. 426-538.000.
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., 4,265,818, Cl. 260-345.200.
Voelskow, Peter. Sorting machine. 4,265,408, Cl. 241-87.000.
Voest-Alpine Aktiengesellschaft: *See—*
Riegler, Ernst; and Schmidt, Manfred, 4,265,136, Cl. 74-380.000.
Vogt, Kuno J. Easy opening top closure member for a container. 4,265,367, Cl. 220-269.000.
Voigt, Wolfgang: *See—*
Fricke, Jobst; Voigt, Wolfgang; and Schmitz, Jurgen, 4,265,157, Cl. 84-1.190.
von Falkai, Bela: *See—*
Reinehr, Ulrich; von Falkai, Bela; and Wilschinsky, Horst, 4,265,971, Cl. 428-376.000.
von Schonfeldt, Hilmar A.: *See—*
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Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.
Voxson S.p.A.: *See—*
Carosi, Franco; and Reggiani, Tito, 4,266,284, Cl. 365-189.000.
Vural, Gulertan; Carle, Udo; and Lenkeit, Manfred, to Koehring GmbH - Bomag Division. Vibration generator with adjustable eccentric weight. 4,265,130, Cl. 74-87.000.
W. H. Brady Co.: *See—*
Frame, Norman J., 4,266,223, Cl. 340-719.000.
W. Hegenscheidt Gesellschaft mbH, Firma: *See—*
Wittkopp, Helmut; and Kunze, Bernhard, 4,265,149, Cl. 82-8.000.
W. R. Grace & Co.: *See—*
Daane, Robert A., 4,265,384, Cl. 226-97.000.
O'Rell, Dennis D.; Palmer, Nigel I.; and Nguyen, Vu H., 4,265,985, Cl. 429-225.000.
Wada, Hideo: *See—*
Kimura, Masao; Sobata, Tamotu; and Wada, Hideo, 4,265,780, Cl. 252-156.000.
Wagner, Gebhard; and Joseph, Werner, to Bayer Aktiengesellschaft. Single-bake two-layer enamelling with electrostatic powder coating. 4,265,929, Cl. 427-33.000.
Wagner, Karl: *See—*
Engelsmann, Dieter; Wagner, Karl; and Hackenberg, Hubert, 4,265,527, Cl. 354-144.000.
Wagster, Robert P.; and Pizzuto, Russell, to Black & Decker Inc. Workpiece support device and auxiliary support body arrangement. 4,265,436, Cl. 269-274.000.
Wahl, Harry A.: *See—*
Britton, Michael W.; Martin, William L.; McDaniel, Jack D.; and Wahl, Harry A., 4,265,310, Cl. 166-259.000.
Wainberg, Lawrence. Container and dispenser-cutter unit combination for containing and holding detachable flexible form-fill-seal plastic pouches. 4,265,372, Cl. 222-82.000.
Waite, Frederick A.: *See—*
Palgrave, Derek A.; Waite, Frederick A.; Birchall, James D.; Cooper, John; and Enever, James A., 4,265,406, Cl. 241-16.000.
Wajc, Samuel J., to Exergie Societe de Personnes a Responsabilitie Limitee. Integrated process for treatment of residual solutions from anodization plants. 4,265,863, Cl. 423-119.000.
Wakizaka, Hiroshi: *See—*
Shinohara, Hiroshi; Otsuka, Yasuhiro; Matsumoto, Shinichi; Furutani, Toshinobu; and Wakizaka, Hiroshi, 4,265,930, Cl. 427-34.000.
Waldron, Christopher J.; and Matchell, Raymond, to Rank Organisation Limited, The. Continuous motion telecine apparatus and method. 4,266,246, Cl. 358-216.000.
Walker, Bryant H.: *See—*
MacNitt, Donald G., Jr.; and Walker, Bryant H., 4,265,105, Cl. 72-354.000.
Walker, Jerry A., to Upjohn Company, The. Processes for the preparation of hydratropic acids and esters. 4,266,069, Cl. 560-20.000.
Walkush, Glenn A.: *See—*
Emmert, Philip H.; Stevens, Richard A.; and Walkush, Glenn A., 4,265,208, Cl. 123-440.000.
Wallace, William K.; and Giardino, David A., to Chicago Pneumatic Tool Company. Pneumatic nut runner with torque indicator. 4,265,108, Cl. 73-862.210.
Wallace, William K.; and Giardino, David A., to Chicago Pneumatic Tool Company. Pneumatic tool governor. 4,265,265, Cl. 137-56.000.
Wallis, Christopher J.: *See—*
Collington, Eric W.; Finch, Harry; Newton, Roger F.; and Wallis, Christopher J., 4,265,891, Cl. 424-244.000.
Walton, Basil V. E.; and Wannamaker, William E. J. Powdered telephone cable filling compound. 4,265,672, Cl. 106-115.000.
Wang, Samuel S. M., to Dow Chemical Company, The. Glaucine lactate salts. 4,265,912, Cl. 424-260.000.
Wangu, Manoj K.: *See—*
Tunador, Malik; and Wangu, Manoj K., 4,265,608, Cl. 425-149.000.
Wank, Rudolf: *See—*
Sheehy, Michael J.; Sondel, Paul M.; Bach, Fritz H.; Bach, Marilyn L.; and Wank, Rudolf, 4,265,873, Cl. 424-1.000.
Wannamaker, William E. J.: *See—*
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Ware, Rowland M., to Cambridge Analyzing Instruments Ltd. Direct synthesis of intermetallic compounds. 4,265,661, Cl. 75-135.000.
Warford, Milan L.: *See—*
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Warnow, Detlef: *See—*
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Gohla, Werner; Hestermann, Klaus; Kandler, Joachim; Wasel-Nielen, Horst-Dieter; Sommer, Klaus; Rohlfs, Hans-Adolf; and Merkenich, Karl, 4,265,776, Cl. 252-98.000.

Watanabe, Ryozo: *See—*
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Watanabe, Takao: *See—*
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Watanabe, Yutaka, to Minolta Camera Kabushiki Kaisha. Manual and power motivated drive means. 4,265,142, Cl. 74-625.000.
Watase, Kenta: *See—*
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Watelet, Robert P., to Rodney Hunt Company. Sluice gate assembly. 4,265,564, Cl. 405-105.000.
Waters Associates, Inc.: *See—*
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Watkins, Hugh: *See—*
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Watson, Thomas E.; and Smallwood, Paul R., Jr., to Westinghouse Electric Corp. Method and apparatus for surge detection and control in centrifugal gas compressors. 4,265,589, Cl. 415-47.000.
Watts, John, to Boeing Company, The. Hydraulic nose landing gear steering actuator for an airplane. 4,265,417, Cl. 244-50.000.
Wayne, Kurt, to Kurt Wayne, Inc. Device for carrying a removable pendant. 4,265,098, Cl. 63-2.000.
Weaver, Lelland A. C.: *See—*
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Weaver, Max A.; Coates, Clarence A., Jr.; and Fleischer, Jean C., to Eastman Kodak Company. Azo dyes derived from 3-amino-2,1-benzisothiazoles and aromatic amine couplers containing sulfo groups, or salts thereof. 4,265,812, Cl. 260-158.000.
Webb, Raymond C.: *See—*
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Webb, William M., to General Electric Company. Ice making apparatus and method. 4,265,089, Cl. 62-72.000.
Weber, Daniel R.; and Webb, Raymond C., to Data Instruments, Inc. Photoelectric object detector system. 4,266,124, Cl. 250-221.000.
Weber Tackle Company: *See—*
Wolf, Rodney A., 4,265,212, Cl. 124-20.00A.
Webster, Noel E.; and McLaughlin, Gary D. Garment hanger lock. 4,265,380, Cl. 223-85.000.
Wedege, Erling. Centrifuge for separating gas mixtures. 4,265,648, Cl. 55-409.000.
Wegleitner, Karlheinz: *See—*
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Wehrli, Rudolf: *See—*
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Weiffen, Karl-Heinz, to Klockner-Humboldt-Deutz AG. Discharge-controlled method for a compressed air-controlled wet settling machine. 4,265,744, Cl. 209-457.000.
Weigl, Walter; Bergman, Ulf; and Baum, Lennart, to Siemens Corporation. Multiple focus X-ray generator. 4,266,133, Cl. 250-402.000.
Weikert, Roy J. Package for maintaining asepsis of a sterile web of bags and method of using. 4,265,279, Cl. 141-10.000.
Weinstein, Barry; and Steyer, William, to General Electric Company. Foreign particle separator system. 4,265,646, Cl. 55-306.000.
Weinstock, Joseph: *See—*
Brush, Charles K.; and Weinstock, Joseph, 4,265,889, Cl. 424-244.000.
Weis, Siegfried K.: *See—*
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Wellington, Charles K.; Dakss, Mark L.; and Benasutti, John E., to GTE Laboratories Incorporated; and Sylvania Inc. Guide capsule for optical fiber connectors. 4,265,514, Cl. 350-96.210.
Wendel, Kurt: *See—*
Mueller-Mall, Rudolf; Wendel, Kurt; Geelhaar, Hans J.; and Melan, Michael, 4,265,796, Cl. 260-29.60R.
Wendling, Francoise: *See—*
Bisagni, Emile; Ducrocq, Claire; Rivalle, Christian; Tambourin, Pierre; Wendling, Francoise; Chermann, Jean-Claude; and Montagnier, Luc, 4,266,060, Cl. 546-64.000.
Wentgate Engineers (1976) Limited: *See—*
Trillwood, Richard E., 4,266,111, Cl. 219-121.0EN.
Werber, Fred W. K. R. Garment designing aid. 4,265,020, Cl. 33-14.000.
Werkzeugmaschinenfabrik Oerlikon-Buhrle AG: *See—*
Kotthuas, Erich, 4,265,053, Cl. 51-3.000.
Werner, Friedrich; and Blank, Heinz U., to Bayer Aktiengesellschaft. Process for the preparation of hydroxy-diphenylamines. 4,265,833, Cl. 564-435.000.
Wertheimer, Alan L., to Leeds & Northrup Company. Optical sample cell for analysis of particles in liquid suspension. 4,265,538, Cl. 356-246.000.
Wescom Switching, Inc.: *See—*
Regan, John F.; Pitroda, Satyan G.; and Min, Byung C., 4,266,292, Cl. 370-13.000.
Wessel, Wolf; and Engel, Gerhard, to Robert Bosch GmbH. Method and apparatus for controlling the onset of fuel injection in diesel engines. 4,265,200, Cl. 123-501.000.
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Western Electric Company, Inc.: *See—*
Chisholm, William M., 4,265,508, Cl. 339-221.00R.
Fanning, William J., 4,265,410, Cl. 242-56.100.
Westinghouse Electric Corp.: *See—*
Blaugher, Richard D.; and Hopkins, Richard H., 4,265,683, Cl. 148-120.000.
Doss, Glenn D.; and Nylund, Theodore W., 4,265,010, Cl. 29-402.010.
Finlayson, James W.; and Johnson, Harold P., 4,265,025, Cl. 33-178.00F.
Goldie, Harry, 4,266,202, Cl. 333-13.000.
Graff, Eugene A., 4,265,950, Cl. 428-35.000.
Krause, Robert F.; Pavlik, Norman M.; and Grunert, Kurt A., 4,265,681, Cl. 148-111.000.
Mandelcorn, Lyon; Dakin, Thomas W.; and Mercier, George E., 4,266,264, Cl. 361-318.000.
Mrenna, Stephen A.; and Ellsworth, James P., 4,266,210, Cl. 335-201.000.
Nagel, George W., 4,265,394, Cl. 236-1.00G.
Shutterly, Harold B., 4,266,243, Cl. 358-121.000.
Watson, Thomas E.; and Smallwood, Paul R., Jr., 4,265,589, Cl. 415-47.000.
Weyer, Hans-Jurgen: *See—*
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Wheeler, John H., to Texacone Company, The. Seal for elevator drive mechanism. 4,265,458, Cl. 277-205.000.
Whinnery, Lewis A., to Kendon Concepts. Solar energy collector assembly and method and apparatus for controlling the flow of a transfer medium. 4,265,221, Cl. 126-422.000.
Whirlpool Corporation: *See—*
Kretchman, Gerald L.; Mulder, James R.; and Pielemeier, John W., 4,265,100, Cl. 68-12.00R.
Miller, Frank E.; and Anderson, James J., 4,266,174, Cl. 318-753.000.
White, Thomas E., to GTE Automatic Electric Laboratories Inc. Key telephone exclusion circuit. 4,266,103, Cl. 179-99.00E.
White, Weimar W.; and Kimble, Laurie A., to Eastman Kodak Company. Process for purifying rare-earth compositions using fractional sulfate precipitation. 4,265,862, Cl. 423-21.100.
Whitehead & Kales Company: *See—*
Peisner, Israel D.; and Stol, George H., 4,265,183, Cl. 105-410.000.
Whittaker Corporation: *See—*
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Whitwam, Ronald L.: *See—*
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Wichers, Rolf H. L.: *See—*
Nylen, Ulf T. G.; Olsson, Lars-Goran; Paulsson, Bengt G.; Qvarnstrom, Lars A. G.; and Wichers, Rolf H. L., 4,266,021, Cl. 435-14.000.
Wick, Alexander E.: *See—*
Daum, Adam; Fernex, Michel; and Wick, Alexander E., 4,265,893, Cl. 424-246.000.
Wickson, Arthur K., to Garrett Corporation, The. Fast closing switch system. 4,266,148, Cl. 307-252.00J.
Wideman, James D.: *See—*
Campbell, Michael F.; Fiala, Richard J.; Wideman, James D.; and Rasche, John F., 4,265,925, Cl. 426-641.000.
Wiegers, Wilhelmus J.; Sprecker, Mark A.; Watkins, Hugh; Vock, Manfred H.; and Schmitt, Frederick L., to International Flavors & Fragrances Inc. Indane alkanols and tricyclic isochromans and organoleptic uses thereof. 4,265,818, Cl. 260-345.200.
Wiegers, Wilhelmus J.; and Hall, John B., to International Flavors & Fragrances Inc. Process for producing cis-pent-2-enyl-1-chloride. 4,265,836, Cl. 570-230.000.
Wielezynski, Lech G. Method for regeneration of used lubricant oils. 4,265,734, Cl. 208-180.000.
Wilczek, Stephen P.: *See—*
Daughton, John W.; Wilczek, Stephen P.; and Steiner, Edward L., 4,266,294, Cl. 371-24.000.
Wild Heerbrugg Aktiengesellschaft: *See—*
Buchmayer, Ludwig, 4,265,421, Cl. 248-188.000.
Wilder, William B., Jr.: *See—*
Daniels, R. Gary; Musa, Fuad H.; Wilder, William B., Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,266,270, Cl. 364-200.000.
Wiles, Michael F.: *See—*
Daniels, R. Gary; Musa, Fuad H.; Wilder, William B., Jr.; Wiles, Michael F.; and Bennett, Thomas H., 4,266,270, Cl. 364-200.000.
Wiley, Jack P. Artificial larynx. 4,264,989, Cl. 3-1.300.
Willi, Hans-Anton. Support device for skiers. 4,265,462, Cl. 280-11.360.

Williams, Clarence E. Door having improved closing and latching systems. 4,265,051, Cl. 49-7.000.

Williams, Roy K.: *See—*
Liu, Chi-sheng; Weaver, Lelland A. C.; and Williams, Roy K., 4,266,200, Cl. 331-94.50G.

Willinger, Allan H., to Willinger Bros., Inc. External biological aquarium filter. 4,265,751, Cl. 210-169.000.

Willinger Bros., Inc.: *See—*
Willinger, Allan H., 4,265,751, Cl. 210-169.000.

Willy Rusch GmbH & Co. KG: *See—*
Rusch, Heinz, 4,265,848, Cl. 264-130.000.

Wilschinsky, Horst: *See—*
Reinehr, Ulrich; von Falkai, Bela; and Wilschinsky, Horst, 4,265,971, Cl. 428-376.000.

Wilson, Donald H., to Ford Motor Company. Carburetor fast idle cam mechanism. 4,265,838, Cl. 261-52.000.

Wiltzius, Raymond D., to Aluminum Company of America. Method and apparatus for protecting electrodes from thermal shock during start up. 4,265,717, Cl. 204-67.000.

Windsor, David L.: *See—*
Denton, Medona B.; Windsor, David L.; and Heine, David R., 4,266,113, Cl. 219-121.0PQ.

Wininger, John M.: *See—*
Zannucci, Joseph S.; and Wininger, John M., 4,265,804, Cl. 260-45.8NT.

Winstel, Guenter, to Siemens Aktiengesellschaft. Storage material for hydrogen. 4,265,720, Cl. 204-129.000.

Winston, Anthony E.; Cala, Francis R.; Lengyel, Stephen P.; Kirschner, Lawrence; and Bracilovic, Dragomir, to Church & Dwight Co., Inc. Method of preparing a dry blended laundry detergent containing coarse granular silicate particles. 4,265,790, Cl. 252-532.000.

Winterstein, James F.: *See—*
Sportelli, Louis; and Winterstein, James F., 4,266,139, Cl. 250-515.000.

Wisconsin Alumni Research Foundation: *See—*
DeLuca, Hector F.; Schnoes, Heinrich K.; Hamer, David E.; and Paaren, Herbert E., 4,265,822, Cl. 260-397.200.
Sheehy, Michael J.; Sondel, Paul M.; Bach, Fritz H.; Bach, Marilyn L.; and Wank, Rudolf, 4,265,873, Cl. 424-1.000.

Wisniewski, Joseph M.: *See—*
Raftery, William B.; Whitwam, Ronald L.; and Wisniewski, Joseph M., 4,265,483, Cl. 297-440.000.

Wissner, Allan: *See—*
Grudzinskas, Charles V.; Wissner, Allan; and Chen, Sow-Mei L., 4,265,904, Cl. 424-285.000.

Wittkopp, Helmut; and Kunze, Bernhard, to W. Hegenscheidt Gesellschaft mbH, Firma. Method and apparatus for truing railroad wheels. 4,265,149, Cl. 82-8.000.

Wohleb, Robert H.: *See—*
Jennings, Walter G.; Wohleb, Robert H.; and Wohlers, Norman W., 4,265,860, Cl. 422-280.000.

Wohlers, Norman W.: *See—*
Jennings, Walter G.; Wohleb, Robert H.; and Wohlers, Norman W., 4,265,860, Cl. 422-280.000.

Wohlmuth, Roman: *See—*
Saischek, Gerald; Wegleitner, Karlheinz; Heu, Ferdinand; and Wohlmuth, Roman, 4,265,664, Cl. 106-18.130.

Wolf, Otto: *See—*
Stiltz, Erwin; Lindenmayer, Heinz; Geis, Wilhelm; and Wolf, Otto, 4,265,435, Cl. 269-139.000.

Wolf, Richard: *See—*
Dreher, Ernst; Stroezel, Reinhold; Spittler, Siegfried; and Wolf, Richard, 4,265,604, Cl. 418-43.000.

Wolf, Rodney A., to Weber Tackle Company. Hand catapult. 4,265,212, Cl. 124-20.00A.

Wong, Patrick S.: *See—*
Bonsen, Pieter; Wong, Patrick S.; and Theeuwes, Felix, 4,265,874, Cl. 424-15.000.

Woodhams, Edward J. Ventilation baffle. 4,265,060, Cl. 52-92.000.

Worrell, Robert V.: *See—*
Morris, John F.; and Worrell, Robert V., 4,265,324, Cl. 175-329.000.

Wortmann, Joachim; Rieb, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Process inhibiting the coalescence of flowable phosphorus pentachloride in closed containers. 4,265,854, Cl. 422-40.000.

Wraga, Joseph B.: *See—*
Gross, William S.; Gibbons, Edward J.; and Wraga, Joseph B., 4,265,781, Cl. 252-174.000.

Wright, Bruce M.: *See—*
Chiu, Tony T.; Wright, Bruce M.; Strasser, Jurgen H.; and Harper, Bruce M., 4,265,168, Cl. 99-448.000.

Wright, Joseph H.: *See—*
Stella, Joseph A.; and Wright, Joseph H., 4,265,525, Cl. 354-76.000.

Wu, Yulin, to Phillips Petroleum Company. Esterification process. 4,266,046, Cl. 528-309.000.

Wurscher, Horst: *See—*
Adamek, Manfred; and Wurscher, Horst, 4,265,551, Cl. 400-221.100.

Wyle Laboratories: *See—*
Cappel, Klaus L., 4,265,123, Cl. 73-663.000.

Wylot, James M.: *See—*
Blair, Gerald E.; Merry, J. Bradford; and Wylot, James M., 4,265,517, Cl. 350-358.000.

Wyoming Mineral Corporation: *See—*
Cleary, James G.; and Zymboly, Gregory E., 4,265,861, Cl. 423-10.000.

Xerox Corporation: *See—*
Daughton, John W.; Wilczek, Stephen P.; and Steiner, Edward L., 4,266,294, Cl. 371-24.000.
Mammino, Joseph, 4,265,995, Cl. 430-107.000.
Stolka, Milan; Pai, Damodar M.; and Yanus, John F., 4,265,990, Cl. 430-59.000.

Yabe, Masao; Tatsuta, Sumitaka; Ochiai, Takeji; Suzuki, Tamotsu; and Sekiya, Masayoshi, to Fuji Photo Film Co., Ltd.; and Nippon Zeon Co., Ltd. Process for forming a subbing layer on a plastic support. 4,265,946, Cl. 427-393.500.

Yabushita, Yasunori: *See—*
Sugitachi, Akio; Takagi, Kunihiko; and Yabushita, Yasunori, 4,265,233, Cl. 128-156.000.

Yamada, Katsuhito: *See—*
Katagiri, Haruo; Fujikake, Kenji; and Yamada, Katsuhito, 4,265,596, Cl. 416-236.00A.

Yamada, Takashi: *See—*
Ebihara, Heihachiro; Sekiya, Fukuo; and Yamada, Takashi, 4,266,278, Cl. 364-705.000.

Yamaguchi, Akia: *See—*
Soelberg, Kenneth B.; Stark, Marvin M.; Thompson, Tommy H.; and Yamaguchi, Akia, 4,265,623, Cl. 433-139.000.

Yamaha Hatsukoki Kabushiki Kaisha: *See—*
Hayashida, Takanori, 4,265,207, Cl. 123-432.000.
Matsumoto, Hiromitsu, 4,265,202, Cl. 123-308.000.

Yamamoto, Osamu, to Kabushikikaisha. Electric can-opener with knife sharpener. 4,265,056, Cl. 51-128.000.

Yamamoto, Takaharu: *See—*
Miyake, Masaya; Nakano, Minol; Yamamoto, Takaharu; and Hara, Akio, 4,265,662, Cl. 75-238.000.

Yamashina, Ikuo; Kawasaki, Toshisuke; and Tsukuda, Michiko, to Tobishi Pharmaceutical Co., Ltd. Plasminogen-activating substance and the preparation and use of such substance. 4,265,881, Cl. 424-106.000.

Yamauchi, Makoto: *See—*
Kaneko, Yoshio; Yamauchi, Makoto; Shiozawa, Shinji; Hayakawa, Yoshihiro; and Banba, Fumio, 4,265,288, Cl. 152-209.00R.

Yamazaki, Etuo, to Fujitsu Fanuc Limited. Tracer control system. 4,266,172, Cl. 318-578.000.

Yamazaki, Kengo: *See—*
Nishimoto, Yoshiharu; and Yamazaki, Kengo, 4,265,693, Cl. 156-218.000.

Yang, Yue-Chyou: *See—*
Lin, Tung-Yen; Yang, Yue-Chyou; and Chow, Philip Y., 4,265,066, Cl. 52-224.000.

Yanus, John F.: *See—*
Stolka, Milan; Pai, Damodar M.; and Yanus, John F., 4,265,990, Cl. 430-59.000.

Yao, Neng-Ping: *See—*
Loutfy, Raouf O.; Keller, Rudolf; and Yao, Neng-Ping, 4,265,716, Cl. 204-67.000.

Yarovoi, Igor V.: *See—*
Dolberg, Vladimir I.; Yarovoi, Igor V.; and Dronin, Mikhail I., 4,265,269, Cl. 137-118.000.

Yarway Corporation: *See—*
Hetz, Heinz K., 4,265,268, Cl. 137-117.000.

Yarwood, John C.: *See—*
Gaule, Gerhart K.; Yarwood, John C.; Tyler, Derek E.; and Yun, Ik Y., 4,265,294, Cl. 164-49.000.

Yasuda, Nobu; Masuda, Masafumi; and Morita, Tomoichi, to Mitsubishi Paper Mills, Ltd. Method for manufacturing cast-coated paper. 4,265,969, Cl. 428-342.000.

Yates, Derek N.; and Presta, John C., to Celanese Corporation. Fiber reinforced composite shaft with metallic connector sleeves mounted by longitudinal groove interlock. 4,265,951, Cl. 428-36.000.

Yazawa, Yoshiyuki: *See—*
Iida, Masaaki; Kato, Chihiro; Ohshima, Shigemitsu; and Yazawa, Yoshiyuki, 4,265,826, Cl. 260-428.000.

Yokomichi, Isao: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Yokomichi, Isao; Tsujii, Yasuhiro; and Nishimura, Shigeyuki, 4,266,064, Cl. 546-345.000.

Yokomizo, Yuji; and Minami, Kiyoshi, to Marcon Electronics Co. Ltd. Method of manufacturing a voltage-nonlinear resistor. 4,265,844, Cl. 264-61.000.

Yokota, Hideo, to Canon Kabushiki Kaisha. Camera viewfinder. 4,265,529, Cl. 354-224.000.

Yokura, Miyoshi: *See—*
Hatada, Kenji; Kobayashi, H.; and Yokura, Miyoshi, 4,265,276, Cl. 138-177.000.

Yoshida Kogyo K.K.: *See—*
Akashi, Shunji, 4,265,004, Cl. 24-205.11R.
Matsuda, Yoshio, 4,265,003, Cl. 24-205.10C.
Yoshieda, Keiichi; and Kuse, Kazuki, 4,265,014, Cl. 29-766.000.

Yoshida, Nobutoshi: *See—*
Ohara, Katsunobu; and Yoshida, Nobutoshi, 4,265,531, Cl. 355-3.0SC.

Yoshida, Tadao, to Sony Corporation. Pulse signal amplifier. 4,266,149, Cl. 307-255.000.

Yoshieda, Keiichi; and Kuse, Kazuki, to Yoshida Kogyo K.K. Apparatus for press-bonding a reinforced tape to a slide fastener with a separable end stop. 4,265,014, Cl. 29-766.000.

Yoshikawa, Syuich: *See*—
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,188, Cl. 112-158.00B.
Suzuki, Kazuo; Koda, Hirokazu; Nakamura, Kenichi; Yoshikawa, Syuich; and Ohara, Naoki, 4,265,189, Cl. 112-158.00E.

Yoshioka, Takao: *See*—
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,265,803, Cl. 260-45.8NZ.

Young, Eric A.: *See*—
Bucy, Raymond W., Jr.; Gallardo, Vicente C., Jr.; Hollett, Ronald C.; and Young, Eric A., 4,265,595, Cl. 416-220.00R.

Young, Rodney C.: *See*—
Durant, Graham J.; Young, Rodney C.; and Tashma, Zev, 4,265,896, Cl. 424-263.000.

Younge, Earl G. Method of and apparatus for extraction of gold from placer gravel. 4,265,743, Cl. 209-452.000.

Yun, Ik Y.: *See*—
Gaule, Gerhart K.; Yarwood, John C.; Tyler, Derek E.; and Yun, Ik Y., 4,265,294, Cl. 164-49.000.

Zahid, Abduz, to Greer Hydraulics, Incorporated. Pulsation dampener for low output systems. 4,265,274, Cl. 138-30.000.

Zahka, Joseph: *See*—
Mir, Leon; and Zahka, Joseph, 4,265,642, Cl. 55-85.000.

Zaidan Hojin Handotai Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi, 4,266,238, Cl. 357-48.000.

Zannucci, Joseph S.; and Wininger, John M., to Eastman Kodak Company. Oriented polyester articles having improved ultraviolet stability (III). 4,265,804, Cl. 260-45.8NT.

Zeisser, Melvin H.: *See*—
Fox, Theodore G.; and Zeisser, Melvin H., 4,265,085, Cl. 60-39.060.

Zens, John F.: *See*—
Suszko, Donald H.; and Zens, John F., 4,265,468, Cl. 280-729.000.

Zenyu Kinzoku Co., Ltd.: *See*—
Baba, Isamu, 4,265,364, Cl. 215-249.000.

Zimmerman, George M., to Bon Aqua, Inc. Magnetic fluid treating unit. 4,265,755, Cl. 210-222.000.

Zimmerman, George M., Sr.; and Menold, Herman E., to Bon Aqua, Inc. Water treating apparatus and methods. 4,265,746, Cl. 210-695.000.

ZODIAC: *See*—
Eymard, Michel, 4,265,418, Cl. 244-125.000.

Zoecon Corporation: *See*—
Henrick, Clive A.; Labovitz, Jeffrey N.; Fox, Roland T. V.; Rathmell, William G.; and Shephard, Margaret C., 4,266,056, Cl. 544-311.000.

Zoll, Paul M. Mechanical pacemaker. 4,265,228, Cl. 128-55.000.

Zornes, Larry; Farley, Lloyd J.; and Powlenko, Edward J., to Mead Corporation, The. Nestable box and box blank. 4,265,391, Cl. 229-34.00R.

Zubkov, Vitaly S.: *See*—
Boxerman, Arkady A.; Kuvshinov, Nikolai S.; Rakovsky, Naftula L.; Tabakov, Vladimir P.; Churilov, Lev D.; Sheremeta, Ostap O.; Pilatovsky, Viktor P.; Gurov, Evgeny I.; Voronin, Pavel G.; Obrezkov, Alexandr I.; Sukrushev, Vitaly S.; Zubkov, Vitaly S.; Tutarinov, Valery M.; Mishakov, Vladimir N.; Miller, Grigory G.; Ruzin, Leonid M.; and Judin, Vladimir N., 4,265,485, Cl. 299-2.000.

Zymboly, Gregory E.: *See*—
Cleary, James G.; and Zymboly, Gregory E., 4,265,861, Cl. 423-10.000.

2500 Corporation, The: *See*—
Spica, Joseph P., 4,265,560, Cl. 401-183.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 5TH DAY OF MAY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Cremer, George D.: *See*—
Long, John V.; and Cremer, George D., Re. 30,600, Cl. 277-96.100.

Gist-Brocades N.V.: *See*—
TeNijenhuis, Bauke, Re. 30,602, Cl. 252-99.000.

Grindheim, Earl A., to Rosemount Inc. Two wire current transmitter responsive to a resistive temperature sensor input signal. Re. 30,597, Cl. 73-362.0AR.

Grindheim, Earl A., to Rosemount Inc. Two wire current transmitter responsive to a resistance sensor input signal. Re. 30,603, Cl. 324-57.00R.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Yagi, Toru; and Nakamura, Akihisa, Re. 30,599, Cl. 123-408.000.

Honeywell Information Systems Inc.: *See*—
Kowalski, John L., Re. 30,604, Cl. 357-70.000.

Horr, Andrew F.; and White, William F., to International Business Machines Corporation. Alignment apparatus. Re. 30,601, Cl. 355-76.000.

International Business Machines Corporation: *See*—
Horr, Andrew F.; and White, William F., Re. 30,601, Cl. 355-76.000.

International Harvester Company: *See*—
Long, John V.; and Cremer, George D., Re. 30,600, Cl. 277-96.100.

Kowalski, John L., to Honeywell Information Systems Inc. Reusable fixture for an integrated circuit chip. Re. 30,604, Cl. 357-70.000.

Long, John V.; and Cremer, George D., to International Harvester Company. Compliant structural members. Re. 30,600, Cl. 277-96.100.

Nakamura, Akihisa: *See*—
Yagi, Toru; and Nakamura, Akihisa, Re. 30,599, Cl. 123-408.000.

Paper Converting Machine Company: *See*—
Spencer, Harvey J., Re. 30,598, Cl. 83-14.000.

Rosemount Inc.: *See*—
Grindheim, Earl A., Re. 30,597, Cl. 73-362.0AR.
Grindheim, Earl A., Re. 30,603, Cl. 324-57.00R.

Spencer, Harvey J., to Paper Converting Machine Company. Method for transverse cutting. Re. 30,598, Cl. 83-14.000.

TeNijenhuis, Bauke, to Gist-Brocades N.V. Alkaline protease produced by a bacillus. Re. 30,602, Cl. 252-99.000.

White, William F.: *See*—
Horr, Andrew F.; and White, William F., Re. 30,601, Cl. 355-76.000.

Yagi, Toru; and Nakamura, Akihisa, to Honda Giken Kogyo Kabushiki Kaisha. Ignition timing control for engine. Re. 30,599, Cl. 123-408.000.

LIST OF DESIGN PATENTEES

Ahn, Chong T. Music box. 259,120, 5-5-81, Cl. D17-24.000.

Airway Industries, Inc.: *See*—
Solomon, Daniel, 259,075, Cl. D3-71.000.

AJP International Inc.: *See*—
Pappas, Anthony J., 259,116, Cl. D15-5.000.

Aktinson, Nigel G., to British Industrial Plastics Limited. Roofing panel. 259,143, 5-5-81, Cl. D25-74.000.

Allibert Exploitation Societe Anonyme: *See*—
Deconinck, Didier, 259,078, Cl. D6-73.000.

American Cyanamid Company: *See*—
Grodin, Adam J., 259,101, Cl. D9-414.000.
Grodin, Adam J., 259,102, Cl. D9-414.000.

Avanti Research & Development, Inc.: *See*—
Steinhofer, Robert J.; and Elste, Edward E., 259,115, Cl. D14-86.000.

Bardeau, William M. Beverage dispensing machine. 259,118, 5-5-81, Cl. D15-112.000.

Bellini, Mario, to Ing. C. Olivetti & C., S.p.A. Text editing machine. 259,121, 5-5-81, Cl. D18-13.000.

Benedict, Stuart E., to Union Carbide Corporation. Bottle. 259,095, 5-5-81, Cl. D9-409.000.

Berkley & Company, Inc.: *See*—
McMickle, Robert L., 259,136, Cl. D22-25.000.

Bernhardt, Floyd V. Golf putter head. 259,134, 5-5-81, Cl. D21-217.000.

British Industrial Plastics Limited: *See*—
Aktinson, Nigel G., 259,143, Cl. D25-74.000.

Broyhill Furniture Industries, Inc.: *See*—
Smith, Melbourne F., Jr., 259,079, Cl. D6-74.000.

Calvert, Rodney K., to Mead Corporation, The. Article carrier blank. 259,104, 5-5-81, Cl. D9-433.000.

Candiliotis, Gerassimos C., to Uniroyal, Inc. Pneumatic tire tread and buttress. 259,112, 5-5-81, Cl. D12-146.000.

Carlin, Milton O. Small animal cage base. 259,144, 5-5-81, Cl. D30-2.000.

Cartier International B.V.: *See*—
Hocq, Robert, 259,105, Cl. D10-23.000.

Champion International Corporation: *See*—
Scott, Raymond G.; and Wysocki, Lawrence S., 259,103, Cl. D9-438.000.

Citizen Watch Co., Ltd.: *See*—
Fukumura, Yutaka, 259,107, Cl. D10-38.000.

Cochrane, Pat; and Montenegro, Antonio. Rectangular picture frame. 259,085, 5-5-81, Cl. D6-242.000.

Cochrane, Pat; and Montenegro, Antonio. Picture frame. 259,086, 5-5-81, Cl. D6-244.000.

Cole & Mason, U.S.A., Ltd.: *See*—
Cowan, David A., 259,089, Cl. D7-53.000.
Cowan, David A., 259,090, Cl. D7-53.000.

Compur-Electronic Gesellschaft mit beschrankter Haftung: *See*—
Pross, Wilhelm; Muhlbock, Franz; and Wienchol, Otto, 259,140, Cl. D24-22.000.

Conti, Rino, to Dart Industries Inc. Shelf bracket or the like. 259,080, 5-5-81, Cl. D6-114.000.

Corelli, Ronald J., to Corham Artificial Flower Co. Display stand for artificial flowers or the like. 259,082, 5-5-81, Cl. D6-149.000.

Corham Artificial Flower Co.: *See*—
Corelli, Ronald J., 259,082, Cl. D6-149.000.

Cowan, David A., to Cole & Mason, U.S.A., Ltd. Pepper mill. 259,089, 5-5-81, Cl. D7-53.000.

Cowan, David A., to Cole & Mason, U.S.A., Ltd. Combined salt and pepper mill. 259,090, 5-5-81, Cl. D7-53.000.

Cyrell, Alexander. Speaker mounting bracket. 259,114, 5-5-81, Cl. D14-37.000.

Daenen, Robert H. C. M., to Dart Industries Inc. Luggage marker or the like. 259,128, 5-5-81, Cl. D20-27.000.

Dart Industries Inc.: *See*—
Conti, Rino, 259,080, Cl. D6-114.000.
Daenen, Robert H. C. M., 259,128, Cl. D20-27.000.

David Hersh & Associates: *See*—
Markowitz, Marvin A., 259,100, Cl. D9-415.000.

Davis, Frank E. Bottle carrier. 259,099, 5-5-81, Cl. D99-48.000.

Day, J. Donald. Combined pocket watch and calculator. 259,106, 5-5-81, Cl. D10-31.000.

Deconinck, Didier, to Allibert Exploitation Societe Anonyme. Lawn chair. 259,078, 5-5-81, Cl. D6-73.000.

Devin, Jules D.: *See*—
Sharpless, Claude J., Jr.; and Devin, Jules D., 259,081, Cl. D6-148.000.

Dillard, Dana C. Skate wheel. 259,135, 5-5-81, Cl. D21-227.000.

Dittmeyer, Rolf. Beverage container. 259,096, 5-5-81, Cl. D9-318.000.
Doyel, John S. Battery-operated brush and scrubber. 259,076, 5-5-81, Cl. D4-14.000.
Elste, Edward E.: *See—*
Steinhofer, Robert J.; and Elste, Edward E., 259,115, Cl. D14-86.000.
Essig, Richard N., to Plastigage Corporation. Insulated conductor standoff. 259,113, 5-5-81, Cl. D13-18.000.
Evans, Catherine C., to Will Ross, Inc. Nurse's headwear. 259,071, 5-5-81, Cl. D2-240.000.
Event Systems, Inc.: *See—*
Holler, Frederick W., III, 259,108, Cl. D10-65.000.
Fukumura, Yutaka, to Citizen Watch Co., Ltd. Wrist watch. 259,107, 5-5-81, Cl. D10-38.000.
Fulkerson, Robert H.: *See—*
Lee, Robert W.; and Fulkerson, Robert H., 259,142, Cl. D24-36.000.
Garstan Corporation: *See—*
Harris, Robert I., 259,074, Cl. D3-62.000.
General Mills Products Corp.: *See—*
Russell, Robert, 259,110, Cl. D11-88.000.
Giles, William E. Motor vehicle air vent. 259,138, 5-5-81, Cl. D23-153.000.
Greiner, John D. Combined chess scroll game board and attached game pieces. 259,130, 5-5-81, Cl. D21-24.000.
Grodin, Adam J., to American Cyanamid Company. Box. 259,101, 5-5-81, Cl. D9-414.000.
Grodin, Adam J., to American Cyanamid Company. Carton. 259,102, 5-5-81, Cl. D9-414.000.
Gulf & Western Manufacturing Company: *See—*
Rolnick, Edward M., 259,092, Cl. D8-98.000.
Harris, Robert I., to Garstan Corporation. Key holder. 259,074, 5-5-81, Cl. D3-62.000.
Hocq, Robert, to Cartier International B.V. Alarm clock. 259,105, 5-5-81, Cl. D10-23.000.
Holler, Frederick W., III, to Event Systems, Inc. Graduated T-scale. 259,108, 5-5-81, Cl. D10-65.000.
Holmes, Ronnie E. Spare key holder. 259,073, 5-5-81, Cl. D3-61.000.
Ing. C. Olivetti & C., S.p.A.: *See—*
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Itakura, Hitoshi, to Tomy Kogyo Co., Inc. Amusement toy. 259,131, 5-5-81, Cl. D21-59.000.
Johnson, Alice L., to Shielding, Inc. X-ray shield. 259,139, 5-5-81, Cl. D24-2.000.
Kayser-Roth Corporation: *See—*
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Ketcham & McDougall, Inc.: *See—*
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Knox, Donna G. Portable sink. 259,137, 5-5-81, Cl. D23-62.000.
Kretz, Edward J., to Owens-Illinois, Inc. Bottle. 259,097, 5-5-81, Cl. D9-394.000.
Lane, Katherine M. Rack for hanging bathing suits and the like. 259,077, 5-5-81, Cl. D6-28.000.
Laughlin, Clayton A., to Ketcham & McDougall, Inc. Pen holder. 259,125, 5-5-81, Cl. D19-84.000.
Lauren, Ralph, to Warner/Lauren Ltd. Cologne bottle. 259,098, 5-5-81, Cl. D9-413.000.
Lazar, Stuart N., to Kayser-Roth Corporation. Slip. 259,070, 5-5-81, Cl. D2-22.000.
Lee, Robert W.; and Fulkerson, Robert H. Massage implement. 259,142, 5-5-81, Cl. D24-36.000.
Macowski, William, to Ketcham & McDougall, Inc. Desk set. 259,122, 5-5-81, Cl. D19-75.000.
Macowski, William, to Ketcham & McDougall, Inc. Desk set. 259,123, 5-5-81, Cl. D19-75.000.
Macowski, William, to Ketcham & McDougall, Inc. Desk set. 259,124, 5-5-81, Cl. D19-75.000.
Macowski, William, to Ketcham & McDougall, Inc. Pencil well. 259,126, 5-5-81, Cl. D19-85.000.
Mainetti, Mario, to Mainetti S.p.A. Garment hanger. 259,087, 5-5-81, Cl. D6-254.000.
Mainetti S.p.A.: *See—*
Mainetti, Mario, 259,087, Cl. D6-254.000.
Markowitz, Marvin A., to David Hersh & Associates. Display container for a handkerchief. 259,100, 5-5-81, Cl. D9-415.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
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Cochrane, Pat; and Montenegro, Antonio, 259,086, Cl. D6-244.000.
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Murphy, Judith M. Jewelry pendant. 259,109, 5-5-81, Cl. D11-75.000.
Nice, Gerald W. Combined holstered notebook and key retainer. 259,072, 5-5-81, Cl. D2-400.000.
Oliver, Louise I. Test tube holder. 259,141, 5-5-81, Cl. D24-32.000.
Olson, David V. Memo paper holder or similar article. 259,127, 5-5-81, Cl. D19-92.000.
Owens-Illinois, Inc.: *See—*
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Pappas, Anthony J., to AJP International Inc. Engine intake manifold. 259,116, 5-5-81, Cl. D15-5.000.
Plastigage Corporation: *See—*
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Pross, Wilhelm; Muhlbock, Franz; and Wienchol, Otto, to Compur-Electronic Gesellschaft mit beschrankter Haftung. Pocket-size centrifuge. 259,140, 5-5-81, Cl. D24-22.000.
Quan, Glen D. Combined bridge and string anchoring device for bass guitars. 259,119, 5-5-81, Cl. D17-21.000.
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Rolnick, Edward M., to Gulf & Western Manufacturing Company. Tap and die wrench. 259,092, 5-5-81, Cl. D8-98.000.
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Sharpless, Claude J., Jr.; and Devin, Jules D. Combined film depository kiosk and sign holder. 259,081, 5-5-81, Cl. D6-148.000.
Shielding, Inc.: *See—*
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Signorile, Eugene R. Combined holder and beverage glass, vase or similar article. 259,088, 5-5-81, Cl. D7-15.000.
Smith, Melbourne F., Jr., to Broyhill Furniture Industries, Inc. Dining room chair. 259,079, 5-5-81, Cl. D6-74.000.
Solomon, Daniel, to Airway Industries, Inc. Portfolio. 259,075, 5-5-81, Cl. D3-71.000.
Spizz, Sheldon N. Toy airplane. 259,132, 5-5-81, Cl. D21-89.000.
Stahel, Alwin J., II, to Ketcham & McDougall, Inc. Combined photograph frame and implement and note holder. 259,084, 5-5-81, Cl. D6-233.000.
Steinhofer, Robert J.; and Elste, Edward E., to Avanti Research & Development, Inc. Communications antenna assembly and base therefor. 259,115, 5-5-81, Cl. D14-86.000.
Steven Manufacturing Company: *See—*
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Tomy Kogyo Co., Inc.: *See—*
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Ueda, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Power coupling handle for use with vacuum cleaner. 259,117, 5-5-81, Cl. D15-62.000.
Union Carbide Corporation: *See—*
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Uniroyal, Inc.: *See—*
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Warner/Lauren Ltd.: *See—*
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Weckman, Richard L., to Owens-Illinois, Inc. Bottle or similar article. 259,094, 5-5-81, Cl. D9-375.000.
Weiss, Gary D. Chess board. 259,129, 5-5-81, Cl. D21-24.000.
Wienchol, Otto: *See—*
Pross, Wilhelm; Muhlbock, Franz; and Wienchol, Otto, 259,140, Cl. D24-22.000.
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Wysocki, Lawrence S.: *See—*
Scott, Raymond G.; and Wysocki, Lawrence S., 259,103, Cl. D9-438.000.

LIST OF PLANT PATENTEES

Armstrong Nurseries, Inc.: *See*—
Swim, Herbert C.; and Ellis, Arnold W., 4,707, Cl. 18.000.
Conard-Pyle Company, The: *See*—
Meilland, Marie L., 4,705, Cl. 11.000.
Ellis, Arnold W.: *See*—
Swim, Herbert C.; and Ellis, Arnold W., 4,707, Cl. 18.000.
Meilland, Marie L., to Conard-Pyle Company, The. Rose plant-Meibiranda variety. 4,705, 5-5-81, Cl. 11.000.
Swim, Herbert C.; and Ellis, Arnold W., to Armstrong Nurseries, Inc. Rose plant. 4,707, 5-5-81, Cl. 18.000.
Weeks, O. L. Rose plant. 4,706, 5-5-81, Cl. 15.000.
Weeks, O. L. Rose plant. 4,708, 5-5-81, Cl. 19.000.
Weeks, O. L. Rose plant. 4,709, 5-5-81, Cl. 20.000.
Weeks, O. L. Rose plant. 4,710, 5-5-81, Cl. 28.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 5TH DAY OF MAY, 1981

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Chance, Leon H.; Timpa, Judy D.; and Drake, George L., Jr. Compositions and processes for producing flame retardant textile materials based on methylolaminotrihalopropyl triazines and antimony oxides. T100,601, 5-5-81, Cl. 8-115.700.
Christian, Robert L. Cable clamp with compression limit stop. T100,605, 5-5-81, Cl. 248-68.00R.
Crill, Philip D.; and Kulick, Shel. Method of placing a spacecraft into final earth orbit or earth escape trajectory. T100,604, 5-5-81, Cl. 244-158.00R.
Drake, George L., Jr.: *See*—
Chance, Leon H.; Timpa, Judy D.; and Drake, George L., Jr., T100,601, Cl. 8-115.700.
Hsieh, Shuang-Shii: *See*—
Lehr, James R.; and Hsieh, Shuang-Shii, T100,603, Cl. 209-167.000.
Kulick, Shel: *See*—
Crill, Philip D.; and Kulick, Shel, T100,604, Cl. 244-158.00R.
Lehr, James R.; and Hsieh, Shuang-Shii. Beneficiation of high carbonate phosphate ores. T100,603, 5-5-81, Cl. 209-167.000.
Roley, Daniel G.; and Wright, Paul L. Apparatus for measuring angles. T100,602, 5-5-81, Cl. 128-782.000.
Timpa, Judy D.: *See*—
Chance, Leon H.; Timpa, Judy D.; and Drake, George L., Jr., T100,601, Cl. 8-115.700.
Wright, Paul L.: *See*—
Roley, Daniel G.; and Wright, Paul L., T100,602, Cl. 128-782.000.

CLASSIFICATION OF PATENTS

ISSUED MAY 5, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

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196 4,265,725
202 4,265,726
242 4,265,727
290 F 4,265,728
298 4,265,729
4,265,730

CLASS 208

80 4,265,731
106 4,265,732
179 4,265,733
180 4,265,734
234 4,265,735
353 4,265,736

CLASS 209

3 4,265,737
31 4,265,738
169 4,265,739
211 4,265,740
4,265,741
399 4,265,742
452 4,265,743
457 4,265,744
617 4,265,361

CLASS 210

132 4,265,748
138 4,265,749
159 4,265,750
169 4,265,751
172 4,265,752
199 4,265,753
222 4,265,754
4,265,755
236 4,265,756
242.3 4,265,757
4,265,758
261 4,265,759
282 4,265,760
315 4,265,761
321.1 4,265,762
323.2 4,265,763
390 4,265,764
401 4,265,765
455 4,265,766
654 4,265,745
662 4,265,767
682 4,265,768
695 4,265,746
699 4,265,769
715 4,265,770
758 4,265,747
769 4,265,771

CLASS 211

60 R 4,265,362

CLASS 215

229 4,265,363
249 4,265,364

CLASS 219

10.55 E 4,266,108
10.57 4,266,109
73.21 4,266,110
121 EN 4,266,111
121 LN 4,266,112
121 PQ 4,266,113
132 4,266,114
216 4,266,115
274 4,266,116
343 4,266,117
492 4,266,118
541 4,266,119

CLASS 220

3.3 4,265,365
269 4,265,367

CLASS 221

10 4,265,368
33 4,265,366
87 4,265,369

CLASS 222

25 4,265,370
70 4,265,371
82 4,265,372
94 4,265,373
95 4,265,374
189 4,265,375
4,265,376
486 4,265,377
539 4,265,378
600 4,265,379

CLASS 223

85 4,265,380

CLASS 224

148 4,265,381
320 4,265,382
326 4,265,383

CLASS 226

97 4,265,384
127 4,265,385
190 4,265,386

CLASS 227

7 4,265,387

CLASS 228

135 4,265,388
219 4,265,389

CLASS 229

30 4,265,390
34 R 4,265,391
37 R 4,265,392
40 4,265,393

CLASS 235

92 CT 4,266,120
381 4,266,121
454 4,266,122

CLASS 236

1 G 4,265,394
13 4,265,395
68 R 4,265,396

CLASS 237

2 B 4,265,397

CLASS 238

1 4,265,398
14 4,265,399
14.4 4,265,400
17 4,265,401

CLASS 239

20 4,265,402
66 4,265,403
186 4,265,404
440 4,265,405

CLASS 241

16 4,265,406
21 4,265,407
87 4,265,408

CLASS 242

56 A 4,265,409
56.1 4,265,410
58.6 4,265,411
71.4 4,265,412
75.3 4,265,413
86.2 4,265,414
107.4 A 4,265,415

CLASS 244

2 4,265,416
50 4,265,417
125 4,265,418

CLASS 246

247 4,265,419

CLASS 248

56 4,265,420
188 4,265,421
219.1 4,265,422
264 4,265,423

CLASS 250

205 4,266,123
221 4,266,124
231 SE 4,266,125
264 4,266,126
288 4,266,127
311 4,266,128
330 4,266,129
339 4,266,130
341 4,266,131
359 4,266,132
402 4,266,133
409 4,266,134
445 T 4,266,135
4,266,136
483 4,266,137
492 A 4,266,138
515 4,266,139
551 4,266,140
564 4,266,141
572 4,266,142

CLASS 251

1 A 4,265,424
9 4,265,425
306 4,265,426
315 4,265,427
346 4,265,428

CLASS 252

8.1 4,265,791
8.6 4,265,772
46.4 4,265,773
49.3 4,265,774
98 4,265,776
99 Re.30,602
113 4,265,777
117 4,265,778
135 4,265,779
156 4,265,780
174 4,265,781
174.19 4,265,782
182 4,265,783
299 4,265,784
429 B 4,265,785
439 4,265,786
455 Z 4,265,787
4,265,788
511 4,265,789
532 4,265,790
573 4,265,775

CLASS 254

100 4,265,429

CLASS 260

18 S 4,265,792
23 EP 4,265,793
28.5 R 4,265,794
29.3 4,265,795
29.6 E 4,265,797
29.6 R 4,265,796
32.4 4,265,798
33.4 R 4,265,799
37 SB 4,265,800
40 P 4,265,802
40 R 4,265,801
45.8 N 4,265,805
45.8 NT 4,265,804
4,265,806
45.8 NZ 4,265,803
97.5 4,265,807
112.5 R 4,265,808
124 R 4,265,809
141 4,265,810
147 4,265,811
158 4,265,812
170 4,265,813
239.3 P 4,265,814
239.55 C 4,265,816
239.55 R 4,265,815
343.3 R 4,265,817
345.2 4,265,818
346.22 4,265,819
4,265,820
348.16 4,265,821
397.2 4,265,822
397.25 4,265,824
397.4 4,265,823
401 4,265,825
428 4,265,826
440 4,265,827
449 L 4,265,828
510 4,265,829
4,265,830

CLASS 261

52 4,265,838
91 4,265,839
115 4,265,840

CLASS 264

22 4,265,841
23 4,265,842
57 4,265,843
61 4,265,844
63 4,265,845
109 4,265,846
122 4,265,847
130 4,265,848
168 4,265,849
225 4,265,850
321 4,265,851
512 4,265,852
519 4,265,853

CLASS 266

54 4,265,430
101 4,265,431
220 4,265,432
273 4,265,433

CLASS 269

27 4,265,434
139 4,265,435
274 4,265,436

CLASS 271

9 4,265,440
19 4,265,441
127 4,265,442
182 4,265,443
207 4,265,444
296 4,265,445
305 4,265,446

CLASS 272

73 4,265,447

CLASS 273

29 A 4,265,448
41 4,265,449
73 G 4,265,450
167 G 4,265,451
4,265,452
201 4,265,453
427 4,265,454

CLASS 277

53 4,265,455
95 4,265,456
96.1 Re.30,600
105 4,265,457
205 4,265,458
212 C 4,265,459

CLASS 279

97 4,265,460

CLASS 280

1.13 4,265,461
11.36 4,265,462
402 4,265,463
460 A 4,265,464
478 A 4,265,465
648 4,265,466
721 4,265,467
729 4,265,468
803 4,265,480

CLASS 283

8 B 4,265,469

CLASS 285

39 4,265,470
111 4,265,471
179 4,265,472
229 4,265,473

CLASS 290

53 4,266,143

CLASS 292

241 4,265,474

CLASS 294

54 4,265,475
64 R 4,265,476

CLASS 296

14 4,265,477
65 R 4,265,478
100 4,265,479

CLASS 297

30 4,265,481
391 4,265,482
440 4,265,483
452 4,265,484

CLASS 299

2 4,265,485
4,265,486
34 4,265,487
43 4,265,488

CLASS 303

3 4,265,489
6 C 4,265,490
4,265,491
14 4,265,492
24 C 4,265,493

CLASS 305

12 4,265,494

CLASS 307

116 4,266,144
200 A 4,266,145
221 D 4,266,146
252 J 4,266,148
255 4,266,149
268 4,266,150
297 4,266,151
492 4,266,147

CLASS 308

23 4,265,495
122 4,265,496
215 4,265,497
230 4,265,498

CLASS 310

59 4,266,152
111 4,266,153
219 4,266,154
239 4,266,155
344 4,266,156
353 4,266,157

CLASS 312

100 4,265,499
107 4,265,500
108 4,265,501
109 4,265,502

CLASS 313

325 4,266,158
422 4,266,159
486 4,266,160
487 4,266,161

CLASS 315

39 4,266,162
151 4,266,163
169.1 4,266,164
224 4,266,165
248 4,266,166
4,266,167

CLASS 318

331 4,266,168
490 4,266,169
565 4,266,170
571 4,266,171
578 4,266,172
585 4,266,173
753 4,266,174
758 4,266,175
801 4,266,176
810 4,266,177

CLASS 320

39 4,266,178

CLASS 322

2 R 4,266,179
4 4,266,180
28 4,266,181

CLASS 323

267 4,266,182

CLASS 324

52 4,266,183
54 4,266,184
57 R Re.30,603
64 4,266,185
65 CR 4,266,187
65 R 4,266,186
4,266,188
117 H 4,266,189
117 R 4,266,190
158 F 4,266,191
168 4,266,192
236 4,266,193
315 4,266,194
439 4,266,195
464 4,266,196

CLASS 328

55 4,266,197

CLASS 329

50 4,266,198

CLASS 330

274 4,266,199

CLASS 331

94.5 G 4,266,200

CLASS 332

9 R 4,266,201

CLASS 333

13 4,266,202
21 A 4,266,203
28 R 4,266,204
165 4,266,205
204 4,266,206

206 4,266,207
218 4,266,208

CLASS 335

6 4,266,209
201 4,266,210
208 4,266,211

CLASS 339

45 M 4,265,503
97 R 4,265,504
99 R 4,265,505
147 R 4,265,506
176 MF 4,265,507
221 R 4,265,508

CLASS 340

81 R 4,266,212
166 R 4,266,213
323 R 4,266,214
347 P 4,266,215
546 4,266,216
573 4,266,217
628 4,266,218
630 4,266,219
4,266,220
679 4,266,221
4,266,222
719 4,266,223
773 4,266,224
799 4,266,225

CLASS 343

100 LE 4,266,226
715 4,266,227
771 4,266,228

CLASS 346

1.1 4,266,229
22 4,266,230
75 4,266,231
140 R 4,266,232

CLASS 350

3.78 4,265,509
55 4,265,510
96.18 4,265,511
96.20 4,265,512
4,265,513
96.21 4,265,514
96.33 4,265,515
345 4,265,516
358 4,265,517

CLASS 351

7 4,265,518
16 4,265,519

CLASS 354

23 D 4,265,520
4,265,521
53 4,265,522
64 4,265,523
65 4,265,524
76 4,265,525
106 4,265,526
144 4,265,527
195 4,265,528
224 4,265,529
235 4,265,530

CLASS 355

3 SC 4,265,531
20 4,265,532
76 Re.30,601
110 4,265,533

CLASS 356

2 4,265,534
70 4,265,535
130 4,265,536
155 4,265,537
246 4,265,538
345 4,265,539
346 4,265,540
350 4,265,541
356 4,265,542
369 4,265,543
427 4,265,544
431 4,265,545

CLASS 357

22 4,266,233
24 4,266,234
30 4,266,235
34 4,266,236
41 4,266,237
48 4,266,238
70 Re.30,604
84 4,266,239

CLASS 358

3 4,266,240
4 4,266,241
22 4,266,242
121 4,266,243
142 4,266,244
153 4,266,245
216 4,266,246
217 4,266,247
223 4,266,248
260 4,266,249
285 4,266,250
286 4,266,251
293 4,266,252
903 4,266,253

CLASS 360

62 4,266,254
90 4,266,255
128 4,266,256

CLASS 361

27 4,266,257
58 4,266,258
97 4,266,259
120 4,266,260
154 4,266,261
228 4,266,262
283 4,266,263
318 4,266,264
321 4,266,265
357 4,266,266
386 4,266,267

CLASS 363

49 4,266,268
68 4,266,269

CLASS 364

200 4,266,270
4,266,271
4,266,272
426 4,266,273
431 4,266,274
4,266,275
475 4,266,276
498 4,266,277
705 4,266,278
726 4,266,279
900 4,266,280
4,266,281

CLASS 365

52 4,266,282
104 4,266,283
189 4,266,284
4,266,285
205 4,266,286

CLASS 366

7 4,265,546
79 4,265,547
208 4,265,548

CLASS 367

185 4,266,287

CLASS 368

28 4,266,288
35 4,266,289
76 4,266,290
168 4,266,291

CLASS 370

13 4,266,292
14 4,266,293

CLASS 371

24 4,266,294

CLASS 400

124 4,265,549
196.1 4,265,550
221.1 4,265,551
236 4,265,552
238 4,265,553
316 4,265,554
320 4,265,555
342 4,265,556
479 4,265,557
672.2 4,265,558

CLASS 401

48 4,265,559
183 4,265,560

CLASS 403

3 4,265,561
374 4,265,562

CLASS 404

75 4,265,563

CLASS 405

105 4,265,564
145 4,265,565
172 4,265,566
195 4,265,567
196 4,265,568
217 4,265,569
258 4,265,570
259 4,265,571

CLASS 406

114 4,265,572
152 4,265,573

CLASS 408

188 4,265,574

CLASS 409

8 4,265,575
129 4,265,576

CLASS 410

118 4,265,577

CLASS 411

442 4,265,160

CLASS 414

130 4,265,578
138 4,265,579
217 4,265,580
228 4,265,581
279 4,265,582
284 4,265,583
412 4,265,584
541 4,265,585
545 4,265,586
723 4,265,587
786 4,265,588

CLASS 415

47 4,265,589
110 4,265,590
148 4,265,591
157 4,265,592

CLASS 416

183 4,265,593
193 A 4,265,594
220 R 4,265,595
236 A 4,265,596

CLASS 417

32 4,265,597
40 4,265,598
54 4,265,599
379 4,265,600
4,265,601

CLASS 418

1 4,265,602
2 4,265,603
43 4,265,604
63 4,265,605
201 4,265,606

CLASS 422

40 4,265,854
65 4,265,855
68 4,265,856
101 4,265,857
129 4,265,858
199 4,265,859
280 4,265,860

CLASS 423

10 4,265,861
21.1 4,265,862
119 4,265,863
121 4,265,864
300 4,265,865
304 4,265,866
309 4,265,867
415 A 4,265,868
447.4 4,265,869
450 4,265,870
531 4,265,871
598 4,265,872

CLASS 424

1 4,265,873
15 4,265,874
19 4,265,875
28 4,265,876
48 4,265,877
68 4,265,878
78 4,265,879
93 4,265,880
106 4,265,881
114 4,265,882
154 4,265,883
177 4,265,884
180 4,265,885
182 4,265,886
201 4,265,887
233 4,265,888
244 4,265,889
4,265,890
4,265,891
246 4,265,892
4,265,893
250 4,265,894
256 4,265,895
260 4,265,912
263 4,265,896
269 4,265,897
270 4,265,898
4,265,899
273 B 4,265,901
273 R 4,265,900
4,265,902
282 4,265,903
285 4,265,904
304 4,265,905
4,265,906
4,265,907
315 4,265,908
324 4,265,909
325 4,265,910
326 4,265,911

CLASS 425

113 4,265,607
149 4,265,608
260 4,265,609
411 4,265,610

CLASS 426

2 4,265,913
13 4,265,914
28 4,265,915
74 4,265,916
104 4,265,917
264 4,265,918
283 4,265,919
384 4,265,920
444 4,265,921
520 4,265,922
538 4,265,923
582 4,265,924
641 4,265,925

CLASS 427

2 4,265,926
4,265,927
4,265,928
33 4,265,929
34 4,265,930
48 4,265,931
53.1 4,265,932
54.1 4,265,933
84 4,265,934
89 4,265,935
140 4,265,936
163 4,265,937
4,265,938
222 4,265,939
292 4,265,940
296 4,265,941
304 4,265,942
305 4,265,943
353 4,265,944
4,265,945
393.5 4,265,946

CLASS 428

35 4,265,947
4,265,948
4,265,949
4,265,950
36 4,265,951
4,265,952
78 4,265,953
85 4,265,954
116 4,265,955
134 4,265,956
143 4,265,957
166 4,265,958
171 4,265,979
216 4,265,959
220 4,265,960
253 4,265,961
287 4,265,962
288 4,265,963
306 4,265,964
315 4,265,965
324 4,265,966
332 4,265,967
336 4,265,968
342 4,265,969
364 4,265,970
376 4,265,971
392 4,265,972
424.8 4,265,973
432 4,265,974
480 4,265,975
486 4,265,976
511 4,265,977
537 4,265,978
591 4,265,981
608 4,265,982
683 4,265,983
697 4,265,980

CLASS 429

178 4,265,984
225 4,265,985

CLASS 430

18 4,265,986
49 4,265,987
56 4,265,988
57 4,265,989
59 4,265,990
64 4,265,991
107 4,265,992
4,265,993
4,265,994
4,265,995
119 4,265,996
122 4,265,997
125 4,265,998
189 4,265,999
192 4,266,000
4,266,001
218 4,266,002
264 4,266,003
269 4,266,004
271 4,266,005
300 4,266,006
306 4,266,007
318 4,266,008
346 4,266,009
355 4,266,010
392 4,266,011
396 4,266,012
410 4,266,013
522 4,266,014
527 4,266,015
4,266,016
533 4,266,017
550 4,266,018
551 4,266,019
4,266,020

CLASS 431

3 4,265,611
66 4,265,612
121 4,265,613
329 4,265,614
353 4,265,615

CLASS 432

8 4,265,616
58 4,265,617

CLASS 433

32 4,265,618
54 4,265,619
69 4,265,620
91 4,265,621
101 4,265,622
139 4,265,623

CLASS 434

88 4,265,624

CLASS 435

14 4,266,021
26 4,266,022
28 4,266,023
68 4,266,024
84 4,266,025
99 4,266,026
4,266,027
118 4,266,028
176 4,266,029
180 4,266,030
188 4,266,031
241 4,266,032
252 4,266,033
253 4,266,034
4,266,035

CLASS 440

53 4,265,625
66 4,265,626

CLASS 455

158 4,266,295
303 4,266,296

CLASS 474

231 4,265,134
267 4,265,627

CLASS 493

428 4,265,438
435 4,265,437
451 4,265,439

CLASS 521

26 4,266,036
82 4,266,037
4,266,038
85 4,266,039
90 4,266,040
92 4,266,041
123 4,266,042
175 4,266,043

CLASS 525

336 4,266,044

CLASS 528

161 4,266,045
309 4,266,046
322 4,266,047

CLASS 536

27 4,266,048

CLASS 544

16 4,266,049
128 4,266,050
181 4,266,051
192 4,266,052
196 4,266,053
215 4,266,054
221 4,266,055
311 4,266,056
330 4,266,057
4,266,058
334 4,266,059

CLASS 546

64 4,266,060
253 4,266,061
281 4,266,062
302 4,266,063
345 4,266,064

CLASS 548

379 4,266,065

CLASS 549

64 4,266,066
79 4,266,067

CLASS 556

430 4,266,068

CLASS 560

20 4,266,069
24 4,266,070
43 4,266,071
53 4,266,072
55 4,266,073
105 4,266,074
120 4,266,075
247 4,266,076

CLASS 562

427 4,266,077

CLASS 564

91 4,266,078
96 4,265,831
163 4,265,832
204 4,265,835
421 4,265,834
435 4,265,833

CLASS 568

11 4,266,079
45 4,266,080
578 4,266,081
639 4,266,082
875 4,266,087

CLASS 570

230 4,265,836
243 4,265,837

CLASS 585

240 4,266,083
469 4,266,084
645 4,266,085
810 4,266,086

CLASSIFICATION OF DESIGNS

D2—	22	259,070		191	259,083		394	259,097		88	259,110	D19—	75	259,122		217	259,134
	240	259,071		233	259,084		409	259,095		157	259,111			259,123		227	259,135
	400	259,072		242	259,085		413	259,098	D12—	146	259,112			259,124	D22—	25	259,136
D3—	61	259,073		244	259,086		414	259,101	D13—	18	259,113		84	259,125	D23—	62	259,137
	62	259,074		254	259,087			259,102	D14—	37	259,114		85	259,126		153	259,138
	71	259,075	D7—	15	259,088		415	259,100		86	259,115		92	259,127	D24—	2	259,139
D4—	14	259,076		53	259,089		433	259,104	D15—	5	259,116	D20—	27	259,128		22	259,140
D6—	28	259,077			259,090		438	259,103		62	259,117	D21—	24	259,129		32	259,141
	73	259,078		64	259,091	D10—	23	259,105		112	259,118			259,130		36	259,142
	74	259,079	D8—	98	259,092		31	259,106	D17—	21	259,119		59	259,131	D25—	74	259,143
	114	259,080		310	259,093		38	259,107		24	259,120		89	259,132	D30—	2	259,144
	148	259,081	D9—	318	259,096		65	259,108	D18—	13	259,121		122	259,133	D99—	48	259,099
	149	259,082		375	259,094	D11—	75	259,109									

CLASSIFICATION OF PLANTS

P.—	11	4,705		15	4,706		18	4,707		19	4,708		20	4,709		28	4,710

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

8—	115.7	T100,601	128—	782	T100,602	209—	167	T100,603	244—	158 R	T100,604	248—	68 R	T100,605			

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